FINAL REPORT

AMBIENT AIR LEVELS OF FLUORIDE AT CORNWALL ISLAND, ONTARIO APRIL 14, 1988 - OCTOBER 12, 1988

Conservation and Protection Service
Environmental Protection
Ontario Region
Ottawa District Office
Environment Canada

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ABSTRACT

STATION B:

- The twenty-four hour particulate and gaseous fluorides dropped in 1988 compared to the 1987 record highs. But the 7 day and 30 day running-average increased.

STATION D:

- The twenty-four hour particulate and gaseous fluorides increased in 1988 compared to 1987.

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1. INTRODUCTION

An ambient air monitoring program has been carried out on Cornwall Island since the spring of 1976. The purpose of this program is to measure the ambient air levels of particulate and gaseous fluorides which exist on the Island. These fluorides originate with the Reynolds Aluminum Plant on the south side of the river in Massena, New York. The data are used as an indicator of the air quality in terms of fluorides and to show any changes or patterns in fluoride air levels from year to year. Additionally, the data are intended to complement any other fluoride data being collected from a variety of investigations such as vegetation and forage studies, well water and vegetable analyses, and livestock sampling.

Initially, the air sampling program was carried out only during the growing season (April 15 - October 15) at Station A (Customs Building) and Station B (Benedict Farm). In 1977, the program was expanded to include winter season sampling (October 16 - April 14) and complete yearly sampling continued until 1983. In 1979, as a result of H&WC's commitment to a major health study a third station (Station C) was established on the western end of the island, on the Thompson Farm. Station A and C were discontinued in 1985 except for the meteorological instrument which remained at Station C until 1986. Since 1984, the air sampling program has been limited to the growing season.

In 1987 a new station, Station D, (Martin Property) was installed on the south side of the island, east of the bridge. This station is across the river and east of the Reynolds plant. The Ontario Ministry of the Environment phytotoxicology investigations have shown higher Fluoride-like injury to sensitive vegetation in this area of Cornwall Island.

To provide more relevant meteorological data, the MRI instrument which record wind direction and speed, was removed in 1987 from Station C on the Thompson Farm and installed at Station D.

2. PROGRAM DEVELOPMENT

There were no significant changes in any of the sampling or analytical procedures used during this reporting period. The Fluoride concentrations were measured at Station B and D located on the Benedict Farm and Martin Property respectively. The meteorological data were collected from the MRI located at Station D on the Martin Property.

3. Format for presentation of the Data

The data are presented in the same basic formats used in previous years. At Station B and Station D 24-hour samples of particulate and gaseous fluorides were obtained. A meteorological instrument recorded hourly readings of wind direction and speed at Station D.

Since 1984 a new data summary has been added for the growing season. This summary is an extraction from the complete listing of those days when the gaseous fluoride levels exceeded the Canadian objective of 0.85 ug/m^3 (proposed objectives for Gaseous Fluorides were published in Canada Gazette I in 1976, but never finalized). This information is presented in the summary table and shows the date and prevailing meteorological conditions when the elevated fluoride readings were measured.

3.1. Raw Data

The raw data contained in Appendix II, consist of the 24-hour, 7-day, 30-day and 70-day running average fluoride concentrations for each sampling station. The 24-hour values are measured concentrations while the 7-day, 30-day and 70-day data are running averages calculated from the 24-hour data. The concentrations are reported in terms of the particulate, gaseous and total fluorides and are expressed in units of ug/m^3 (as HF) corrected to temperature and pressure conditions of 25° C and 760 mm Hg. A concentration is not reported if the sampling time varied by more than 2% of the 24-hour period. Any missing or insufficient data are indicated by a blank space in the listings.

Included with the 24-hour fluoride data are the meteorological data for each sample which was determined from the hourly readings collected at Station D. Predominant wind directions, based on an eight point compass, are presented as well as the daily average wind speed in km/h. The wind directions are indicated by numbers as follows: N=1, NE=2, E=3, SE=4, S=5, SW=6, W=7 and NW=8. A calm is reported if the wind speed is <3 km/hr. Also included is a value for the wind consistency index (CI) which shows, on a scale of 0 - 100, the variability in the reported predominant direction over the 24-hour period. The higher the value of CI, the more consistently the wind blew from the reported direction. A CI of 100 indicated the winds blew steadily from the reported direction while a CI of 0 indicated extremely variable wind directions. With a CI <95, the winds varied within a 22.5° sector of the reported direction whereas a CI <84 indicated variability within a 45° sector.

3.2 DATA SUMMARIES

The raw data have been summarized in a series of tables and figures, which are described below. The 1988 Growing Season Data are summarized in this format and are presented in Appendix I.

Plot of 24-Hour Fluoride Concentrations VS Time (Figure 1a, 1b)

These figures presented in Appendix I, are plots of the 24-hour fluoride concentrations measured over the sampling period. Daily particulate, gaseous and total fluoride values are displayed in a bar graph format. These figures show the relative levels and variability of the concentrations throughout the season. Thus one can see at a glance the relative proportion of particulate to gaseous fluoride and also any particular day, week or month when higher or lower values were recorded. Any missing or insufficient data for a particular day are indicated by a small bar below the X-axis of the plot.

Historical Summary of 24-Hour Average Fluoride Concentrations (Table 1)

This table lists the 24-hour average particulate and gaseous fluoride concentrations measured over the various seasonal sampling periods. The data for the new Station D, which is in closer proximity to the Reynolds Plant, shows a higher annual average compared with the other sites.

Historical Summary of Fluoride Results Related to Selected Ambient Air Concentration Limits (Tables 2a, 2b and 2c)

This table summarizes the seasonal fluoride results showing how they relate to criteria, standards and objectives set by Ontario, New York State and Canada respectively. Results are reported for averaging periods of 24 hours, 7 days, 30 days and 70 days showing the percent of time the allowable levels were exceeded. Limits for gaseous and total fluorides are presented with the allowable concentrations reported in terms of ug/m^3 as HF corrected to temperature and pressure conditions of 25° C and 760 mm Hg.

In 1986 the Ontario Criteria for average fluoride concentrations of gaseous, particulate and total fluorides were slightly changed as follows: 24 hour gaseous from 0.82 to 0.86 ug/m^3, total from 1.63 to 1.72 ug/m^3; gaseous 30 day running average from 0.32 to 0.34 ug/m^3; and total fluoride 30 day running average from 0.66 to 0.68 ug/m^3.

Wind Rose (Figure 2)

This figure is compiled from the hourly meteorology readings taken at Station D and displays the percentage frequency with which winds were blowing from one of the eight major wind directions during the sampling period. The percentage of calm conditions (wind speed <3 km/hr.) and percentage of missing data for the period are also reported.

Historical Summary of Wind Direction Frequency (Table 3)

This table presents the primary, secondary and tertiary wind directions recorded during each growing season. The percentage frequency of the recorded directions, calms and missing data for the season are reported.

Correlation of Fluoride Concentrations and Wind Direction (Tables 4a, 4b)

These tables present the number of fluoride readings and corresponding 24-hour average fluoride concentrations recorded for each wind direction. The data are summarized into three categories: All recorded values, values when wind CI>84 and values when wind CI>95. As the consistency of the wind direction increases, the correlation of higher fluoride concentrations with a particular wind direction becomes more apparent.

Pollution Roses (Figures 3a, 3b, 4a, 4b)

These figures are graphical displays of the average fluoride concentrations recorded for each wind direction during the sampling period. Roses for both particulate and gaseous fluorides are presented. These displays are superimposed on a map of the sampling area and thereby illustrate pictorially the direction from which the wind was blowing when elevated fluoride readings were recorded.

Data When Gaseous Fluorides Exceeded 0.85 ug/m^3 (Tables 5a, 5b)

These data proposed (1976) show the date and meteorological conditions when the Canadian Air quality objective of 0.85 ug/m^3 was exceeded. Station B and D should generally be affected when consistent winds blow from the west and southwest. This would be indicated by high values of % frequency and consistency index (CI) in this listing.

4. DISCUSSION

Fluoride monitoring was carried out over the 1988 Growing Season from April 14 to October 12,1988 at Station B located on the Benedict Farm and at Station D on the Martin Property.

(i) At Station "B" the examination of the historical summary of the 24 hours average fluoride concentration shows that the level of particulate fluoride decreased significantly from levels found in 1987 when record high concentrations were recorded. The concentrations of gaseous fluorides also indicate a significant decrease from the high level recorded in 1987.

Twenty-Four hour gaseous fluoride concentrations greater than 0.85 ug/m3 (proposed Federal objective) were recorded 5 times or 3.2% of the data compared to 19 times or 12% of the data in 1987.

Exceedances of Ontario's criteria of 0.86 ug/m3 for air quality decreased from 12.0% in 1987 to 3.2 % in 1988. The New York State 24-hour Gaseous air quality standard of 2.85% ug/m3 was exceeded twice as compared to once during the previous year. New York State weekly (1.65 ug/m3) and monthly (0.80 ug/m3) running-averages were exceeded 13 times (7.5%) and 24 times (15.8%) as compared to none in 1987. Canada's 7, 30 and 70 day running-averages were exceeded 14 times (8.1%), 60 times (39.5%) and 112 times (100.0%) respectively; as compared to 28 times (16.6%), 72 times (47.7%) and 111 times (100.0%) in 1987. Ontario's 24 hour total fluoride criterion of 1.72 ug/m3 and its 30 day criteria of 0.68 ug/m3 were exceeded 2 and 53 times respectively.

(ii) At Station "D" the examination of the historical summary of the 24 hours average fluoride concentrations shows that the level of the particulate incresed slightly from levels found in 1987 when concentrations were first recorded at the Station. The concentrations of gaseous fluorides also indicate an increase from the level recorded in 1987.

Twenty-Four hour gaseous fluoride concentrations greater than 0.85 ug/m3 (proposed Federal objective) were recorded 35 times or 23.0% of the data as compared to 38 times or 22.2% of the data in 1987.

Exceedances of Ontario's 24-hour criterion of 0.86 ug/m3 for gaseous fluorides was essentially unchanged at 23% in 1988. New York State 24 hour air quality standard of 2.85% ug/m3 was exceeded 5 times representing 3.3% of the data, as compared to 3 times in 1987. New York State weekly (1.73 ug/m3) and monthly (0.84 ug/m3) running averages were exceeded 7 times (4.0%) and 43 times (28.3%) as compared to none in 1987. Canada's 7, 30 and 70 day running-averages were exceeeded 93 times (53.8%) , 131 times (86.2%) and 112 times (100.0%) respectively; as compared to 76 times (43.7%), 151 times (100.0%) and 111 times (100.0%) in 1987. Ontario's 24 hour total fluoride criterion of 1.72 ug/m3 and its 30 day objective of 0.68 ug/m3 was exceeded 21 times (13.8%) and 121 times (79.6%) respectively.

Wind direction in 1988 was predominantly from the South West (25.1%) as compared to West (20.9%) in 1987. Secondary and tertiary winds were from the North West (19.3%) and West (13.5%) as compared to North West (16.9%) and South West (15.1%) in 1987. Calm periods remained relatively the same at 17.0% in 1988 and 16.8% in 1987. There was no missing data for the meterological instrument.

The pollution roses indicate that higher levels of particulate and gaseous fluorides are associated with winds originating in the West, South West and North West. The highest levels of these pollutants are encountered with winds from the South West which blow in a direct line from the Reynolds Plant to Station D on the Martin property.

APPENDIX I

Data summaries (tables and figures)

The tables and figures discussed in section 3.2 are listed below:

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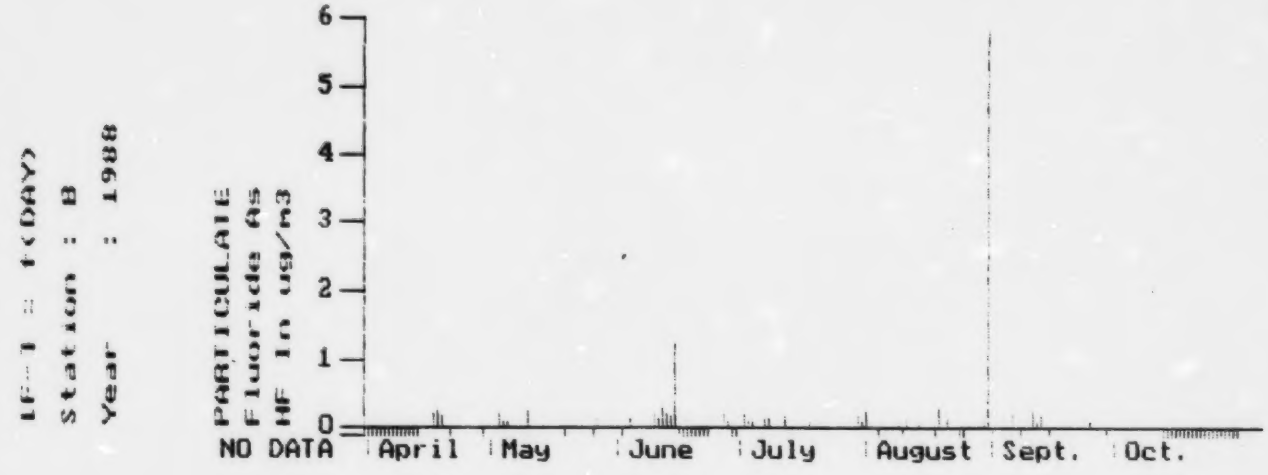
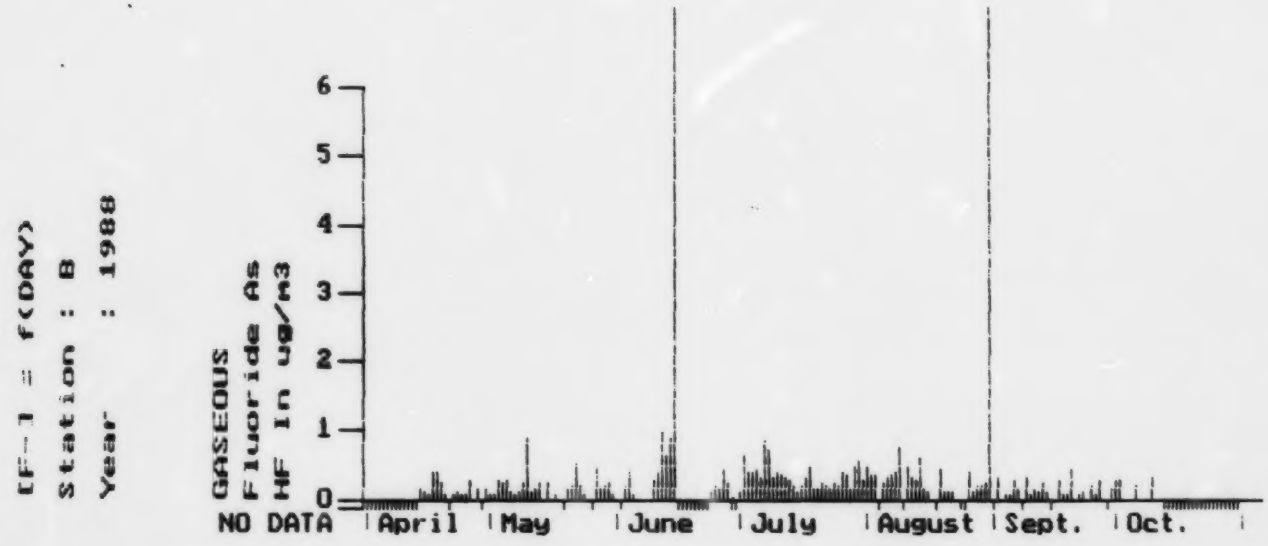
FIG 1a PLOT OF 24 HOUR FLUORIDE CONCENTRATION VS TIME
STATION B APRIL 14 - OCTOBER 12,1988





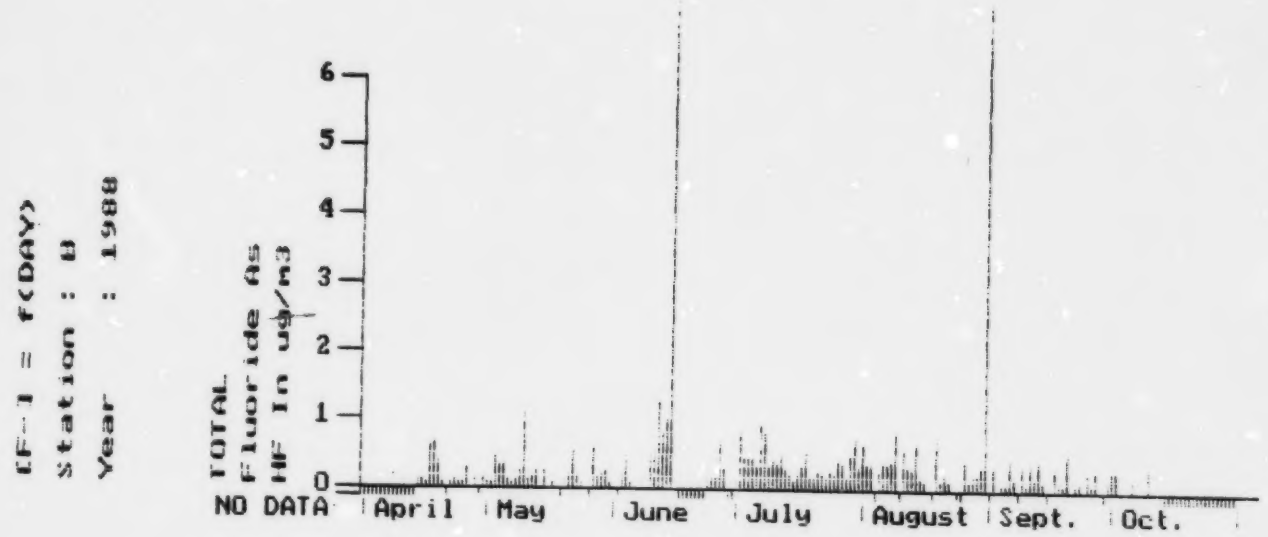
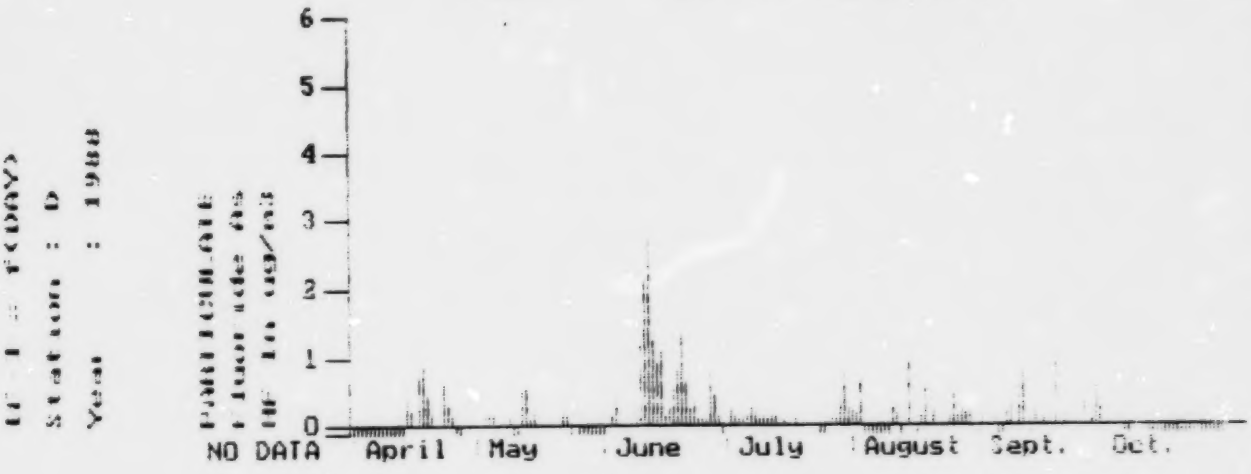
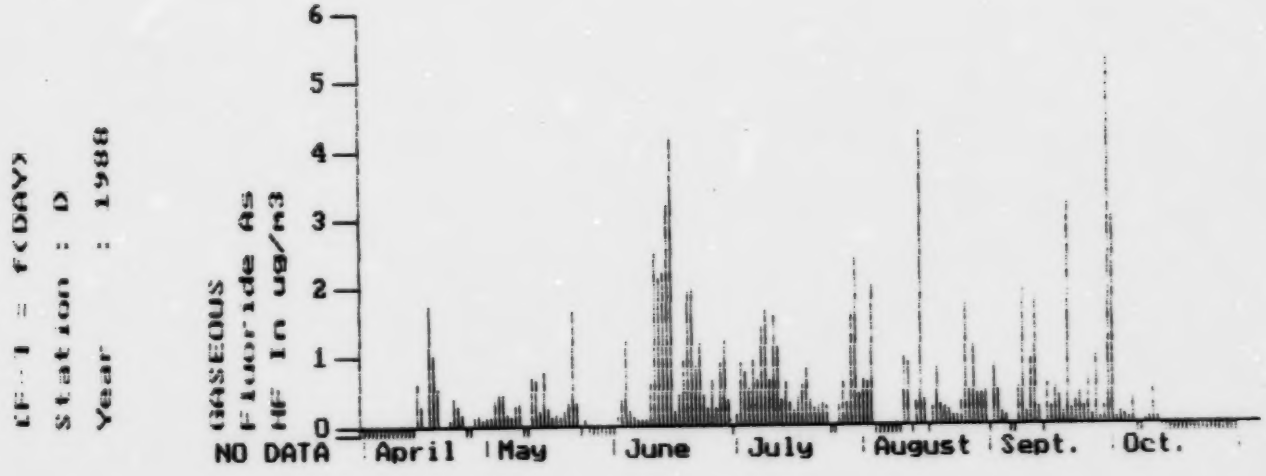

EF-1 = F(DAY)
Station : 8
Year : 1988
TOTAL
Fluoride As
HF In ug/m3
6
5
4
3
2
1
0
NO DATA
April
May
June
July
August
Sept.
Oct.

FIG 1b PLOT OF 24 HOUR FLUORIDE CONCENTRATION VS TIME
STATION D APRIL 14 - OCTOBER 12,1988





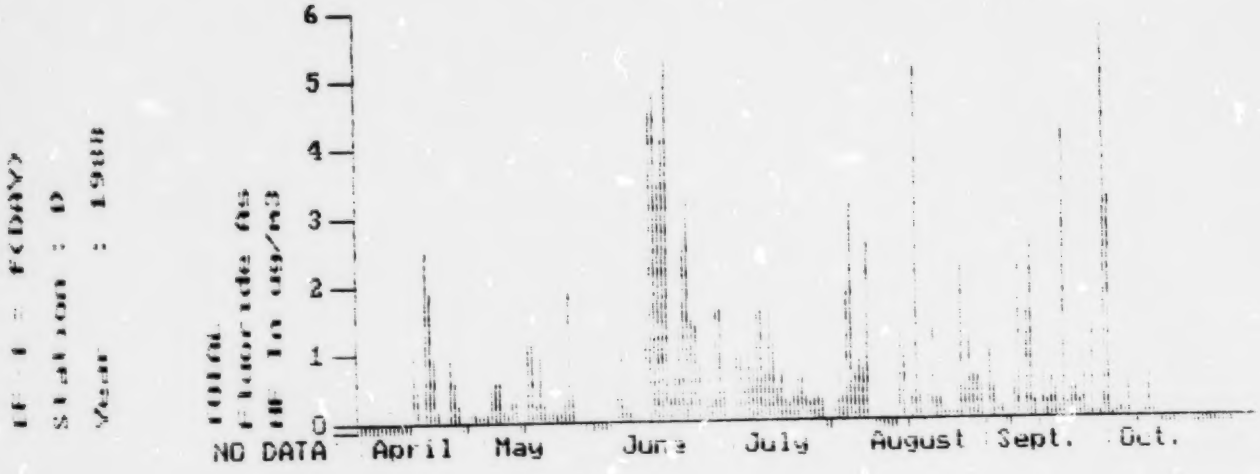

6
5
4
3
2
1
0
NO DATA
April
May
June
July
August
Sept.
Oct.

TABLE 1

Historical Summary of 24 Hour Average Fluoride Concentrations (ug/m^3)

Particulate Fluorides

	Station A	Station B	Station C	Station D
1976	0.35	0.15	*	*
1977	0.61	0.27	*	*
1978	0.21	0.12	*	*
1979	0.14	0.10	*	*
1980	0.18	0.13	*	*
1981	0.15	0.15	0.06	*
1982	0.11	0.09	0.02	*
1983	0.20	0.13	0.03	*
1984	0.11	0.09	0.03	*
1985	*	0.07	*	*
1986	*	0.08	*	*
1987	*	0.14	*	0.28
1988	*	0.08	*	0.22

Gaseous Fluorides

	Station A	Station B	Station C	Station D
1976	0.36	0.28	*	*
1977	0.28	0.28	*	*
1978	0.29	0.24	*	*
1979	0.31	0.30	*	*
1980	0.27	0.38	*	*
1981	0.42	0.46	0.28	*
1982	0.16	0.15	0.04	*
1983	0.27	0.25	0.09	*
1984	0.25	0.24	0.12	*
1985	*	0.15	*	*
1986	*	0.19	*	*
1987	*	0.39	*	0.55
1988	*	0.37	*	0.67

* Data not collected at Station during the corresponding year.

TABLE 2a

Historical Summary of Fluoride Results Related to Selected Ambient Air Concentration Limits Growing Season.

Agency	Time/ Type	Allowable Conc. (ug/m3)	% OF TIME ALLOWABLE LIMIT WAS EXCEEDED									
			1976		1977		1978		1979		1980	
			A	B	A	B	A	B	A	B	A	B
Ontario (Criteria)	24h/G	0.82	9.3	6.0	3.3	2.8	6.8	0.6	4.6	2.9	1.2	7.8
	24h/T	1.63	9.0	2.0	14.0	5.1	2.5	0	1.7	1.2	1.2	0.7
	30d/G	0.32	72.1	27.6	37.4	29.0	51.9	26.0	57.1	44.8	23.4	69.5
	30d/T	0.66	55.2	0	54.8	47.7	32.5	0	0	0.6	0	20.1
New York State (Standards)	24h/G	2.99	0.6	0	0	0	0	0	0	0	0	0
	1w/G	1.73	0	0	0	0	0	0	0	0	0	0
	1m/G	0.84	0	0	0	0	0	0	0	0	0	0
Canada (objectives)	24h/G	0.85	9.0	6.0	3.3	2.8	6.8	1.0	4.0	2.3	0.6	5.7
	7d/G	0.55	9.9	2.9	9.1	3.4	10.3	0	8.0	6.2	0.6	25.5
	30d/G	0.35	66.2	13.2	32.9	22.6	34.4	2.6	53.9	42.9	17.5	59.7
	70d/g	0.20	100	100	73	100	100	100	100	100	100	100

Reported as equivalent HF concentration corrected to a temperature of 25 C and a pressure of 760 mm HG.

Since 1982 new samplers were used in the network which eliminated passive loadings of fluorides on the filters.

Data not collected at stations A and C in 1985.

G - Gaseous Fluoride

T - Total Fluorides

TABLE 2b

Historical Summary of Fluoride Results Related to Selected Ambient Air Concentration Limits Growing Season.

Agency	Time/ Type	Allowable Conc. (ug/m3)		% OF TIME ALLOWABLE LIMIT WAS EXCEEDED													
				1981			1982			1983			1984			1985	
				A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
		Previous	1985														
Ontario	24h/G	0.82	0.86	11.0	9.9	1.8	0.6	0.6	0	5.8	3.3	0	3.9	2.0	0		0.6	
(Criteria)	24h/T	1.63	1.72	1.2	1.2	0.9	0.6	0	0	2.9	0	0	0.6	0.1	0		0.6	
	30d/G	0.32	0.34	67.5	92.9	35.1	0	0	0	49.4	22.1	0	1.3	9.1	0		0	
	30d/T	0.66	0.68	24.7	33.1	0	0	0	0	15.6	0	0	0	0	0		0	
New York	24h/G	2.99	*	0	0	0	0	0	0	0	0	0	0	0	0		0	
State	1w/G	1.73	*	0	0	0	0	0	0	0	0	0	0	0	0		0	
(Standards)	1m/G	0.84	*	0	0	0	0	0	0	0	0	0	0	0	0		0	
Canada	24h/G	0.85	*	18.0	8.6	1.8	0.6	0.6	0	5.8	2.2	0	3.2	2.0	0		1.3	
(objectives)	7d/G	0.55	*	21.7	25.4	4.3	0	0	0	5.6	4.0	0	0	2.5	0		0	
	30d/G	0.35	*	61.0	82.5	16.6	0	0	0	27.2	19.5	0	0	3.9	0		0	
	70d/g	0.20	*	100	100	100	4.4	19.3	0	91.2	90.4	0	100	95.6	0		0	

Reported as equivalent HF concentration corrected to a temperature of 25 C° and a pressure of 760 mm HG.

Since 1982 new samplers were used in the network which eliminated passive loadings of fluorides on the filters.

Data not collected at stations A and C in 1985.

G - Gaseous Fluoride

T - Total Fluorides

* - No changes from previous years

TABLE 2c

Historical Summary of Fluoride Results Related to Selected Ambient Air Concentration Limits Growing Season.

Agency	Time/ Type	Allowable Conc. (ug/m3)		% OF TIME ALLOWABLE LIMIT WAS EXCEEDED										
				1986			1987				1988			
				A	B	C	A	B	C	D	A	B	C	D
		Previous	1985											
Ontario	24h/G	0.82	0.86		1.3			12.0		22.2		3.2		23.0
(Criteria)	24h/T	1.63	1.72		0			4.4		14.6		1.3		13.8
	30d/G	0.32	0.34		8.5			51.0		100.0		39.5		88.8
	30d/T	0.66	0.68		0			26.5		98.0		34.9		79.6
New York	24h/G	2.99	*		0			0.6		1.8		1.3		3.3
State	1w/G	1.73	*		0			0.0		0.0		0.0		0.0
(Standards)	1m/G	0.84	*		0			0.0		0.0		0.0		0.0
Canada	24h/G	0.85	*		1.3			12.0		22.2		3.2		23.0
(objectives)	7d/G	0.55	*		1.2			16.6		43.7		8.1		53.8
	30d/G	0.35	*		5.2			47.7		100.0		39.5		86.2
	70d/g	0.20	*		78.8			100.0		100.0		100.0		100.0

Reported as equivalent HF concentration corrected to a temperature of 25 C° and a pressure of 760 mm HG.

Since 1982 new samplers were used in the network which eliminated passive loadings of fluorides on the filters.

Data not collected at stations A and C in 1985.

G - Gaseous Fluoride

T - Total Fluorides

* - No changes from previous years

Figure 2

Wind Rose
Cornwall Island
1988 season

Calm Winds :17 %

% Of Time Of
Wind Directions

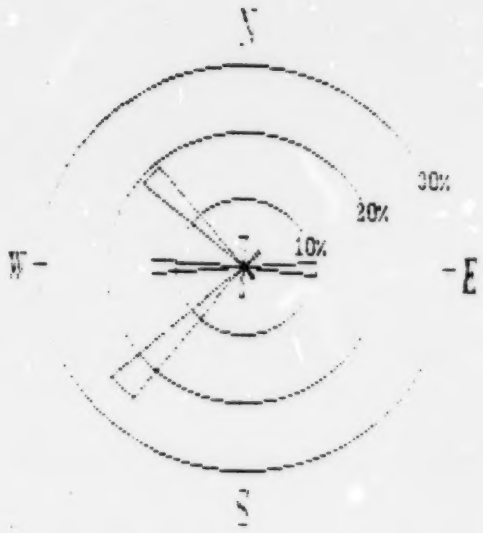


TABLE 3

Historical Summary of Wind Direction Frequency
Growing Season

Year	Primary	Secondary	Tertiary	Calm*	Missing Data
1976	SW (32.1%)	SW (23.8%)	NE (12.4%)	-	3.4%
1977	SW (25.8%)	W (19.8%)	NW (13.1%)	7.0%	2.0%
1978	SW (21.3%)	W (19.9%)	NW (13.4%)	20.6%	3.8%
1979	SW (18.9%)	W (18.6%)	NW (11.9%)	25.6%	12.1%
1980	W (18.6%)	SW (18.5%)	NW (10.7%)	27.8%	44.4%
1981	W (16.1%)	SW (15.9%)	NW (13.4%)	31.4%	19.5%
1982	SW (15.9%)	W (14.0%)	NE (11.3%)	34.3%	9.8%
1983	SW (30.7%)	W (24.2%)	NE (8.0%)	22.7%	12.6%
1984	SW (30.7%)	W (24.7%)	NE (8.5%)	17.5%	11.9%
1985	S (22.2%)	SE (13.0%)	N (9.6%)	17.5%	19.9%
1986	W (26.0%)	E (17.9%)	NW (12.0%)	20.2%	0.1%
1987	W (20.9%)	NW (16.9%)	SW (15.1%)	16.8%	10.8%
1988	SW (25.1%)	NW (19.3%)	W (13.5%)	17.0%	0.0%

TABLE 4A

CORRELATION OF FLUORIDE CONCENTRATIONS (ug/m3) AND WIND DIRECTION
April 14, 1988 - October 12, 1988
Station B

	All Recorded Values			Values When CI >84			Values Within CI >95		
	No.	Part.	Gas.	No.	Part.	Gaseous	No.	Part.	Gaseous
N	4	0.00	0.11	0	0.00	0.00	0	0.00	0.00
NE	3	0.00	0.03	0	0.00	0.00	0	0.00	0.00
E	17	0.00	0.06	7	0.00	0.05	6	0.00	0.03
SE	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
S	2	0.00	0.15	0	0.00	0.00	0	0.00	0.00
SW	46	0.20	0.88	17	0.08	0.45	5	0.11	0.52
W	20	0.09	0.34	5	0.14	0.36	2	0.14	0.19
NW	31	0.01	0.12	13	0.00	0.05	5	0.00	0.05
CALM	35	0.02	0.17	0	0.00	0.00	0	0.00	0.00
Missing Data	24	-	-	8	-	-	4	-	-

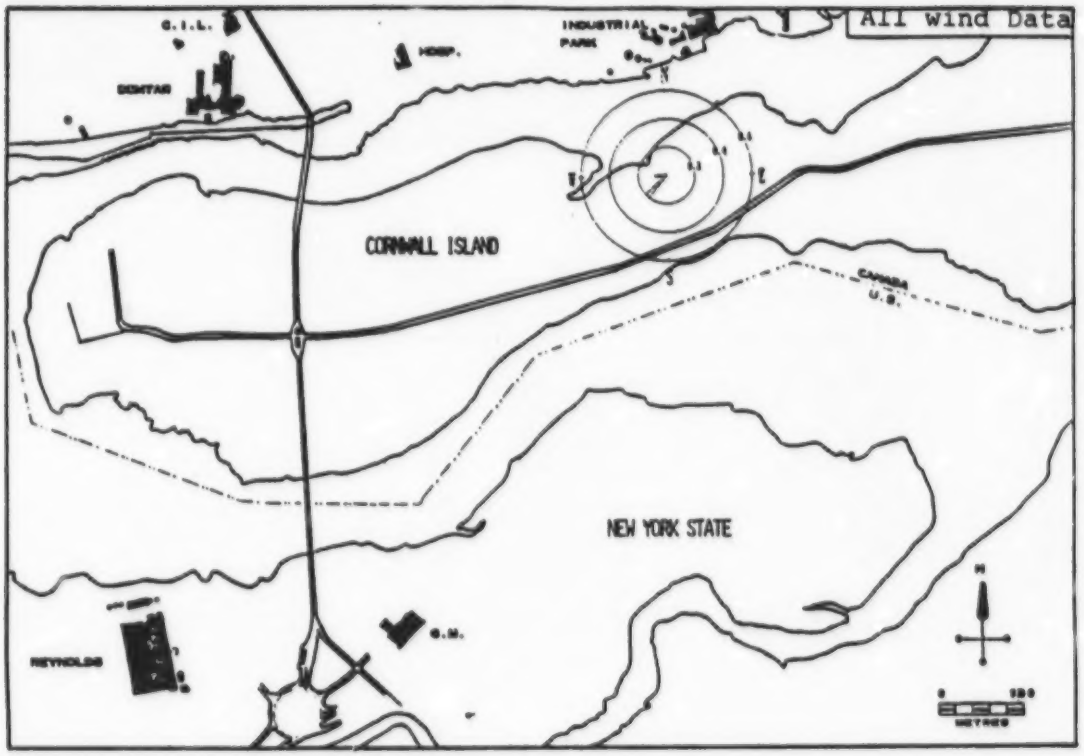
TABLE 4B

CORRELATION OF FLUORIDE CONCENTRATIONS (ug/m3) AND WIND DIRECTION
April 14,1988 - October 12,1988
Station D

	All Recorded Values			Values When CI >84			Values WIthin CI >95		
	No.	Part.	Gas.	No.	Part.	Gaseous	No.	Part.	Gaseous
N	3	0.00	0.15	0	0.00	0.00	0	0.00	0.00
NE	3	0.00	0.15	1	0.00	0.13	0	0.00	0.00
E	17	0.04	0.16	7	0.00	0.13	6	0.00	0.11
SE	0	0.00	0.00	0	0.00	0.00	0.	0.00	0.00
S	3	0.06	0.31	0	0.00	0.00	0.	0.00	0.00
SW	45	0.48	1.31	17	0.70	1.98	6	1.20	2.98
W	18	0.28	0.75	5	0.46	1.01	2	0.46	0.75
NW	28	0.11	0.44	12	0.11	0.45	6	0.15	0.77
CALM	35	0.07	0.37	0	0.00	0.00	0	0.00	0.00
Missing Data	30	-	-	8	-	-	2	-	-

FIG 3a

Pollution Roses - Station B
Particulate Fluorides
(ug/m3)



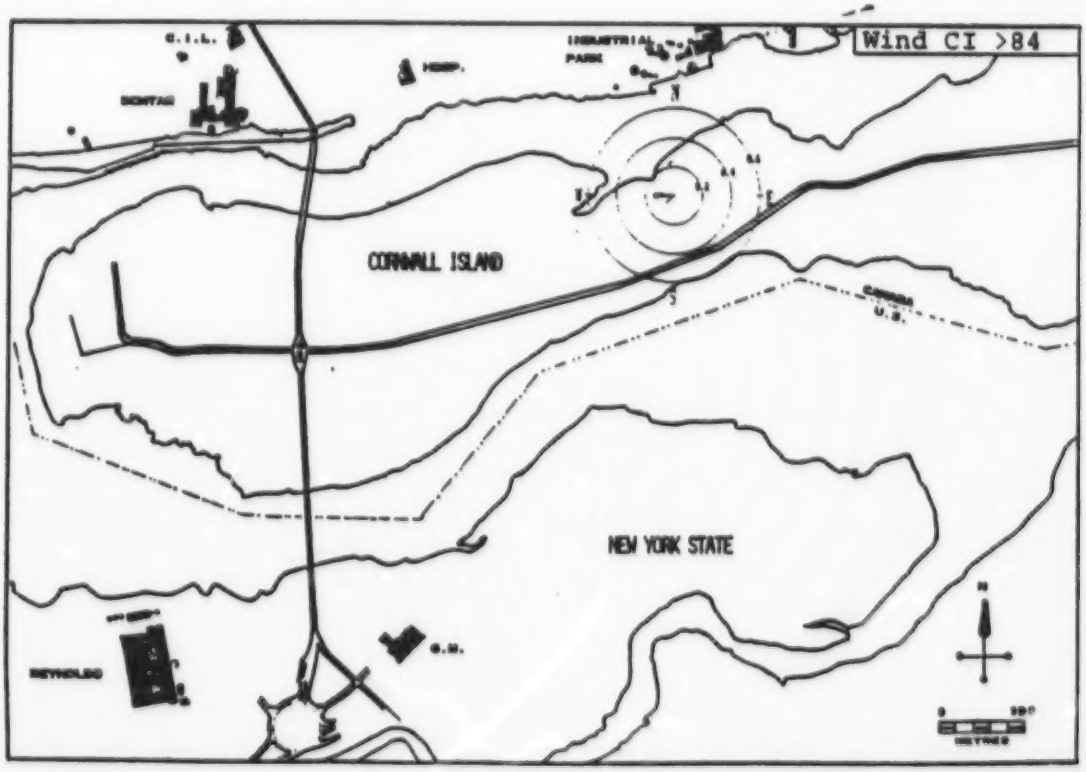
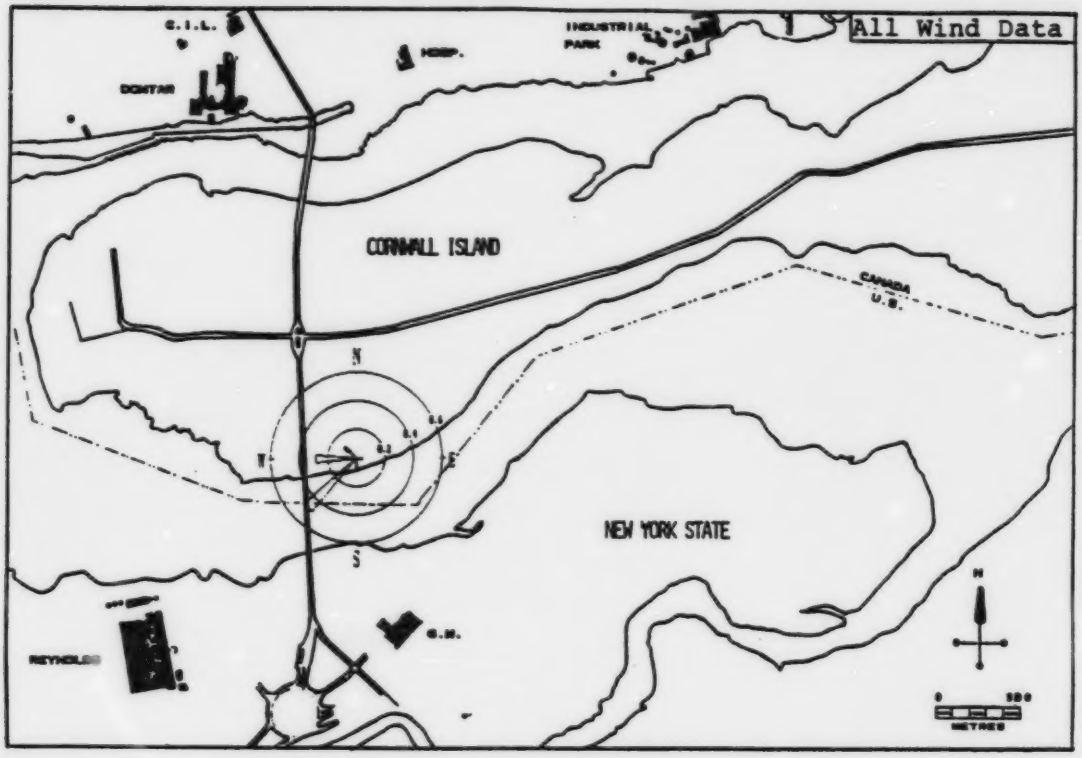


FIG 3b

Pollution Roses - Station D
Particulate Fluorides
(ug/m3)



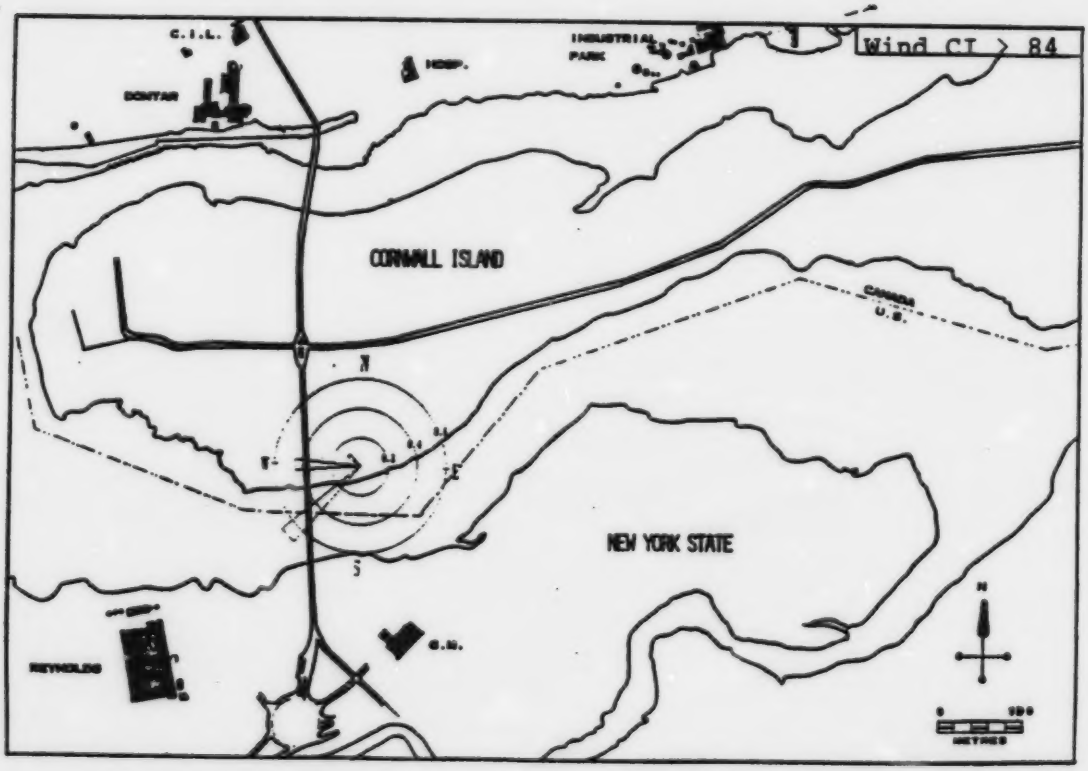
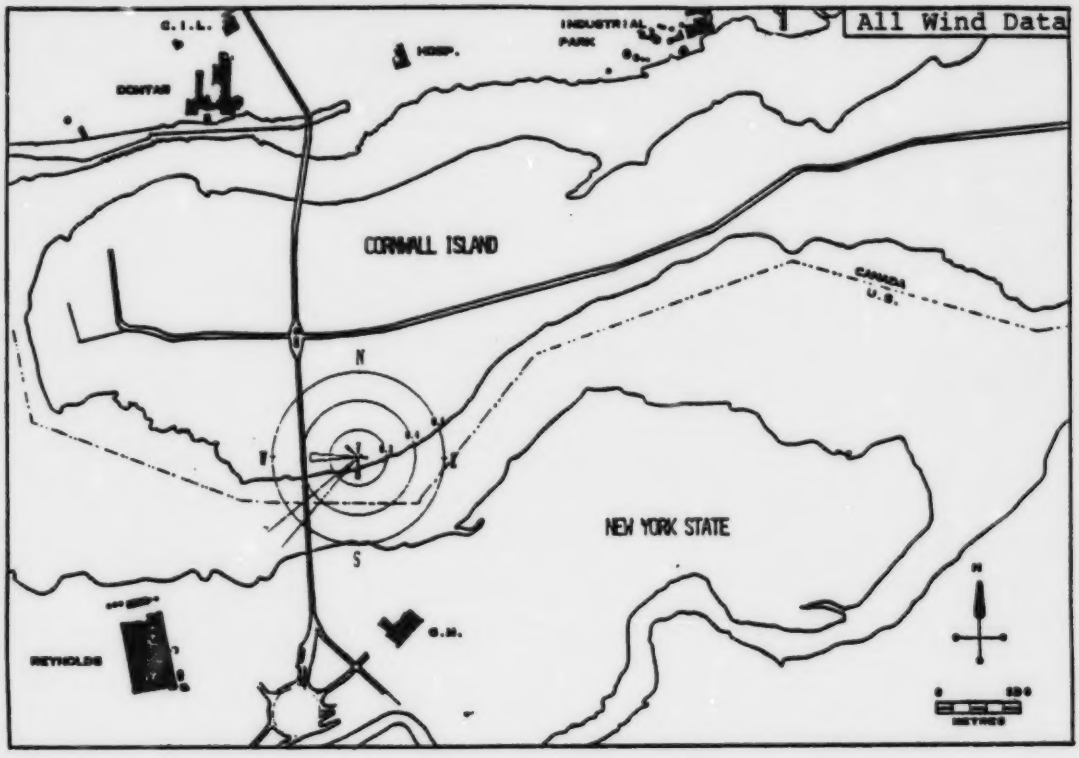


FIG 4a

Pollution Roses - Station B
Gaseous Fluorides
(ug/m3)



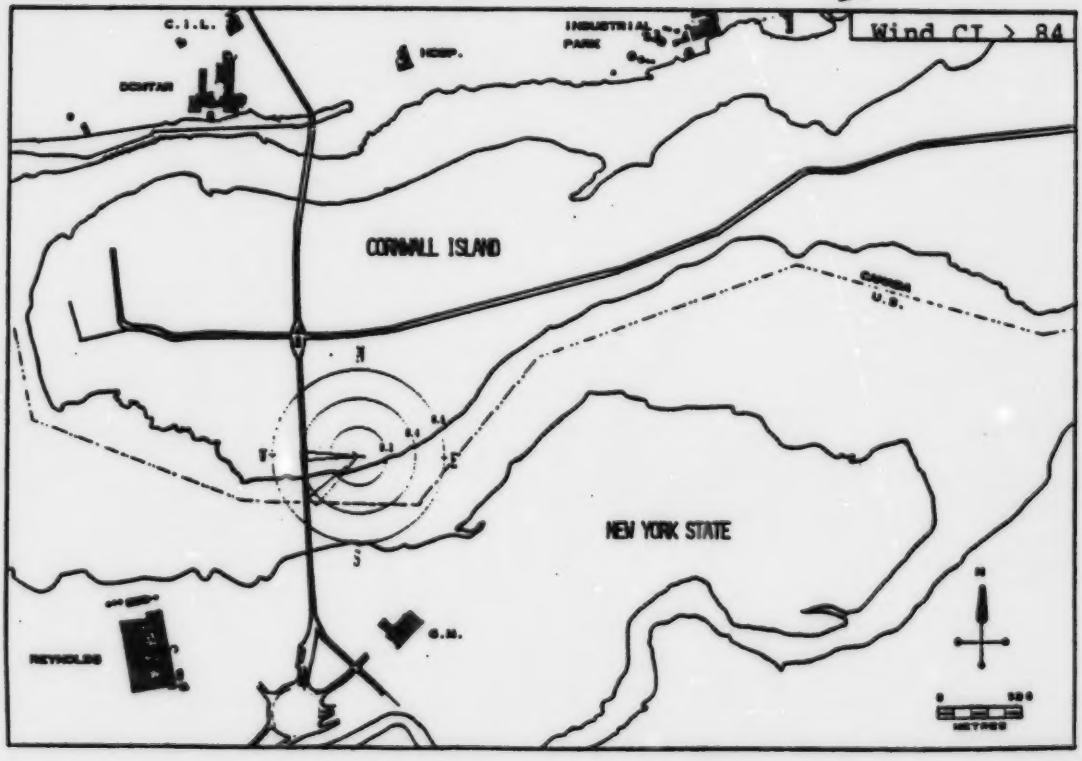
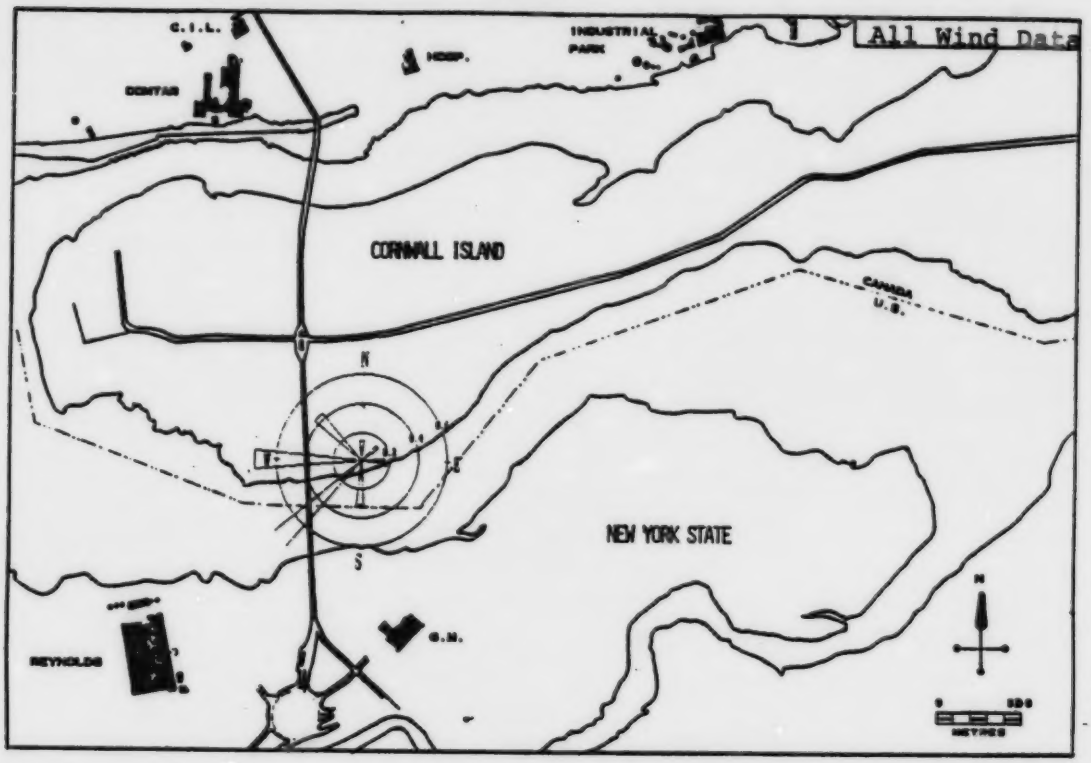


FIG 4b

Pollution Roses - Station D
Gaseous Fluorides
(ug/m3)



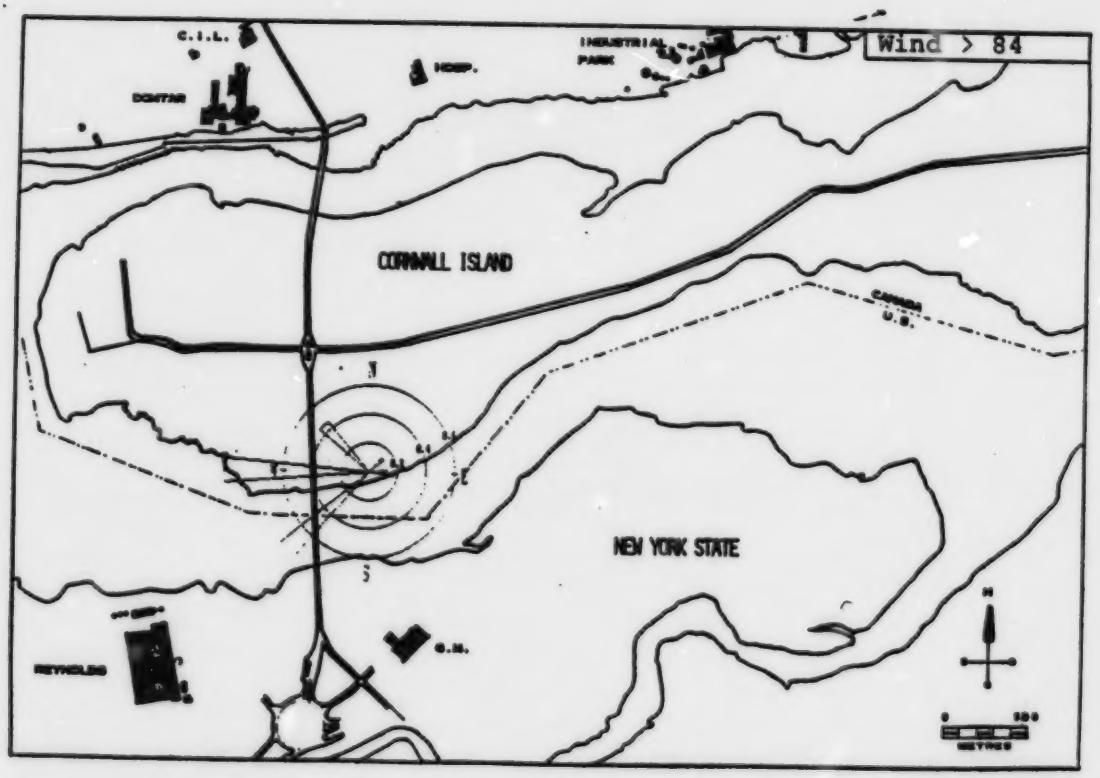


TABLE 5A

24 Hour Average Fluorides and Wind data When Gaseous Fluorides were greater or equal to 0.85 ug/m3 for 1988 Growing Season -Station B

Date	Wind Data Pred. Dir.		Speed		Fluoride Concentration (ug/m3 as HF)			Ratio of P.F./G.F.
d/m	8pt	%	CI	(kmph)	P.F.	G.F.	T.F.	24hr.
10/05	W	38	79	13	0.21	0.87	1.09	0.2
12/06	SW	75	94	14	0.32	0.95	1.28	0.3
14/06	SW	79	95	14	0.14	0.86	1.00	0.2
15/06	SW	75	81	15	1.22	7.35	8.57	0.2
31/08	SW	54	64	5	5.82	18.48	24.29	0.3

TABLE 5B

24 Hour Average Fluoride and Wind Data When Gaseous Fluorides were greater or equal to 0.85 ug/m3 or 1988 Growing Season -Station D.

Date	Wind Data Pred. Dir.			Speed	Fluoride Concentration (ug/m3 as HF)			Ratio of P.F./G.F.
D/m	8pt	%	CI	(kmph)	P.F.	G.F.	T.F.	24hr.
17/04	W	71	89	21	0.76	1.70	2.46	0.4
18/04	W	100	100	22	0.85	1.00	1.84	0.9
22/05	NW	42	76	10	0.22	1.62	1.85	0.1
4/06	W	46	81	7	0.40	1.16	1.57	0.3
11/06	SW	92	98	14	2.09	2.45	4.54	0.9
12/06	SW	75	94	14	2.66	2.10	4.77	1.3
13/06	SW	79	84	12	1.23	2.18	3.40	0.6
14/06	SW	79	95	14	0.90	3.16	4.07	0.3
15/06	SW	75	81	15	1.08	4.18	5.26	0.3
18/06	SW	71	89	9	0.48	0.91	1.40	0.5
19/06	SW	100	100	19	0.79	1.93	2.72	0.4
20/06	SW	46	60	11	1.31	1.99	3.30	0.7
22/06	NW	63	73	11	0.21	1.13	1.35	0.2
28/06	SW	50	66	11	0.42	1.20	1.62	0.4
2/07	NW	38	66	7	0.21	0.87	1.08	0.2
5/07	C	33		1	0.10	0.90	1.00	0.1
7/07	W	54	92	7	0.20	1.36	1.57	0.1
8/07	SW	50	86	8	0.15	1.61	1.76	0.1
10/07	SW	54	90	13	0.11	1.55	1.66	0.1
11/07	W	38	70	8	0.07	1.08	1.15	0.1
29/07	SW	88	91	13	0.37	1.59	1.97	0.2
30/07	SW	75	64	12	0.75	2.37	3.12	0.3
3/08	SW	46	45	12	0.60	1.98	2.59	0.3
11/08	W	33	58	5	0.23	0.95	1.19	0.2
12/08	SW	33	66	7	0.13	0.88	1.01	0.2
15/08	NW	75	94	10	0.90	4.25	5.15	0.2
26/08	SW	79	90	13	0.45	1.71	2.16	0.3
28/08	SW	63	80	10	0.19	1.11	1.29	0.2
9/09	SW	83	89	13	0.27	1.94	2.21	0.1
11/09	C	38			0.58	0.92	1.49	0.6
12/09	SW	75	81	12	0.81	1.76	2.57	0.5
20/09	SW	71	92	14	0.98	3.20	4.18	0.3
27/09	SW	38	59	13	0.34	0.99	1.33	0.3
30/09	SW	100	100	19	0.55	5.27	5.83	0.1
1/10	SW	96	96	21	0.20	2.99	3.19	0.1

ACKNOWLEDGEMENT

The 1988 Cornwall Island fluoride monitoring Program was conducted under the general direction of Dale B. Cameron, P. Eng., Manager, Environmental Protection, Ottawa District Office.

Maintenance of the Fluoride Monitoring Stations and preperation of the Annual Report were performed by:

M. DeBellefeuille, Environmental Officer.
M. Lalonde, Student, University of Ottawa.
J. Racle, Student, University of Ottawa.
C. Lussier, Student, University of Ottawa.

APPENDIX II

TABLE 6A

1988 Growing Season

Station B

24 Hour - Basic Statistics
ug/m3 as HF

	Maximum	Mean	Minimum	Missing Data
Particulate	5.82	0.08	0.00	13.19%
Gaseous	18.48	0.37	0.00	13.19%
Total	24.29	0.45	0.00	13.19

7 Day Data - Basic Statistics
ug/m3 as HF

Particulate	1.22	0.09	0.00	1.14%
Gaseous	7.35	0.45	0.03	1.14%
Total	8.57	0.54	0.03	1.14%

30 Day Data - Basic Statistics
ug/m3 as HF

Particulate	0.29	0.09	0.00	0.00%
Gaseous	1.02	0.44	0.11	0.00%
Total	1.29	0.54	0.11	0.00%

70 Day Data - Basic Statistics
ug/m3 as HF

Particulate	0.13	0.08	0.03	0.00%
Gaseous	0.59	0.44	0.29	0.00%
Total	0.71	0.52	0.32	0.00%

TABLE 6B

1988 Growing Season

Station D

24 Hour - Basic Statistics
ug/m3 as HF

	Maximum	Mean	Minimum	Missing Data
Particulate	2.66	0.22	0.00	16.48%
Gaseous	5.27	0.67	0.00	16.48%
Total	7.93	0.89	0.00	16.48%

7 Day Data - Basic Statistics
ug/m3 as HF

Particulate	1.32	0.21	0.00	1.14%
Gaseous	2.12	0.67	0.08	1.14%
Total	3.43	0.88	0.08	1.14%

30 Day Data - Basic Statistics
ug/m3 as HF

Particulate	0.61	0.23	0.06	0.00%
Gaseous	1.18	0.70	0.23	0.00%
Total	1.71	0.93	0.34	0.00%

70 Day Data - Basic Statistics
ug/m3 as HF

Particulate	0.34	0.25	0.13	0.00%
Gaseous	0.97	0.76	0.61	0.00%
Total	1.31	1.00	0.80	0.00%

RAW DATA

24 H Average Fluoride Concentration And Wind Data For 1989 Growing Season

Station : B
Sample Period Beginning At 1200

Date	WIND DATA D	%	CI	km/h	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	[Par]/[Gas]
April 14	6	38	82	17	0.00	0.13	0.13	0.0
April 15	6	58	77	11	0.00	0.09	0.09	0.0
April 16	8	83	95	14	0.00	0.04	0.04	0.0
April 17	7	71	89	21	0.19	0.38	0.58	0.5
April 18	7	100	100	22	0.27	0.38	0.65	0.7
April 19	7	58	90	15	0.14	0.22	0.36	0.6
April 20	8	42	27	9	0.00	0.06	0.06	0.0
April 21	8	88	96	12				
April 22	C	42		6	0.00	0.08	0.08	0.0
April 23	3	58	59	12	0.00	0.08	0.08	0.0
April 24	8	67	88	15	0.00	0.04	0.04	0.0
April 25	6	46	73	10	0.00	0.06	0.06	0.0
April 26	7	33	63	10	0.00	0.26	0.26	0.0
April 27	3	88	97	13	0.00	0.00	0.00	
April 28	3	92	98	15	0.00	0.14	0.14	0.0
April 29	2	71	92	10				
April 30	8	38	72	6	0.00	0.13	0.13	0.0
May 1	3	75	82	6	0.00	0.08	0.08	0.0
May 2	3	58	74	7	0.00	0.08	0.08	0.0
May 3	7	42	18	6	0.17	0.24	0.41	0.7
May 4	7	63	62	4	0.06	0.24	0.29	0.2
May 5	7	33	69	6	0.07	0.27	0.33	0.2
May 6	2	38	70	10	0.00	0.09	0.09	0.0
May 7	3	58	58	6	0.00	0.07	0.07	0.0
May 8	5	38	57	7	0.00	0.11	0.11	0.0
May 9	5	38	56	12	0.00	0.20	0.20	0.0
May 10	7	38	79	13	0.21	0.87*	1.09	0.2
May 11	8	38	32	6	0.00	0.10	0.10	0.0
May 12	6	50	87	16	0.00	0.12	0.12	0.0
May 13	7	29	56	13	0.00	0.21	0.21	0.0
May 14	C	63		2	0.00	0.00	0.00	
May 15	6	71	80	12	0.00	0.23	0.23	0.0
May 16	3	46	67	6	0.00	0.00	0.00	
May 17	3	100	100	10	0.00	0.05	0.05	0.0
May 18	3	100	100	11	0.00	0.00	0.00	
May 19	3	100	100	8				
May 20	C	58		3	0.00	0.14	0.14	0.0
May 21	C	54		2	0.00	0.17	0.17	0.0
May 22	8	42	76	10	0.00	0.49	0.49	0.0
May 23	8	33	60	6	0.00	0.19	0.19	0.0
May 24	8	38	70	8	0.00	0.06	0.06	0.0
May 25	8	58	65	7	0.00	0.00	0.00	
May 26	6	54	80	15				
May 27	6	58	90	13	0.08	0.45	0.54	0.2
May 28	C	46		5	0.00	0.15	0.15	0.0
May 29	C	58		3	0.00	0.16	0.16	0.0
May 30	8	67	79	7	0.00	0.21	0.21	0.0
May 31	8	79	88	6	0.00	0.08	0.08	0.0

* <-Indicates NAQO Maximun Acceptable Limit of 0.85 ug/m3 Exceeded

24 H Average Fluoride Concentration And Wind Data For 1988 Growing Season

Station : B
Sample Period Beginning At 1200

	WIND DATA				FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			
Date	D	%	CI	km/h	[Par]	[Gas]	[Tot]	[Par]/[Gas]
June 1	3	33	58	9	0.00	0.00	0.00	
June 2	C	54		4				
June 3	C	38		4	0.00	0.18	0.18	0.0
June 4	7	46	81	7	0.09	0.41	0.50	0.2
June 5	8	54	89	12	0.00	0.07	0.07	0.0
June 6	8	100	100	10	0.00	0.00	0.00	
June 7	8	79	88	7	0.00	0.00	0.00	
June 8	8	38	56	6	0.00	0.00	0.00	
June 9	8	75	90	6	0.00	0.00	0.00	
June 10	6	54	70	10	0.19	0.27	0.46	0.7
June 11	6	92	98	16	0.10	0.40	0.49	0.2
June 12	6	75	94	14	0.32	0.95*	1.28	0.3
June 13	6	79	84	12	0.18	0.61	0.79	0.3
June 14	6	79	95	14	0.14	0.86*	1.00	0.2
June 15	6	75	81	15	1.22	7.35*	8.57	0.2
June 16	C	29		6				
June 17	7	42	61	4				
June 18	6	71	89	9				
June 19	6	100	100	19				
June 20	6	46	60	11				
June 21	6	42	63	8				
June 22	8	63	73	11				
June 23	8	33	68	7				
June 24	7	25	41	5	0.00	0.10	0.10	0.0
June 25	8	29	44	15	0.00	0.19	0.19	0.0
June 26	8	58	76	6	0.00	0.14	0.14	0.0
June 27	6	46	68	11	0.19	0.42	0.61	0.5
June 28	6	50	66	11	0.05	0.22	0.28	0.2
June 29	5	38	54	8				
June 30	1	67	90	6				
July 1	C	42		3	0.00	0.08	0.08	0.0
July 2	8	38	66	7	0.18	0.63	0.80	0.3
July 3	7	46	72	6	0.05	0.37	0.42	0.1
July 4	C	75		1	0.06	0.37	0.43	0.2
July 5	C	33		3	0.00	0.41	0.41	0.0
July 6	C	42		3	0.00	0.32	0.32	0.0
July 7	7	54	92	7	0.11	0.81	0.92	0.1
July 8	6	50	86	8	0.11	0.68	0.79	0.2
July 9	7	38	50	4	0.00	0.32	0.32	0.0
July 10	6	54	90	13	0.00	0.38	0.38	0.0
July 11	7	38	70	8	0.00	0.33	0.33	0.0
July 12	C	42		4	0.16	0.31	0.47	0.5
July 13	6	33	57	9	0.00	0.24	0.24	0.0
July 14	1	42	59	6	0.00	0.18	0.18	0.0
July 15	8	29	18	5	0.00	0.12	0.12	0.0
July 16	3	58	38	6	0.00	0.16	0.16	0.0
July 17	C	38		4	0.00	0.31	0.31	0.0
July 18	C	33		5	0.05	0.46	0.51	0.1

* <-Indicates NAQO Maximun Acceptable Limit of 0.85 ug/m3 Exceeded

24 H Average Fluoride Concentration And Wind Data For 1988 Growing Season

Station : B
Sample Period Beginning At 1200

	WIND DATA				FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			
Date	D	%	CI	km/h	[Par]	[Gas]	[Tot]	[Par]/[Gas]
July 19	C	58		2	0.00	0.15	0.15	0.0
July 20	B	71	87	5	0.00	0.14	0.14	0.0
July 21	B	46	37	5	0.00	0.22	0.22	0.0
July 22	C	63		2	0.00	0.18	0.18	0.0
July 23	C	54		2	0.00	0.16	0.16	0.0
July 24	C	38		3	0.00	0.23	0.23	0.0
July 25	C	58		2	0.00	0.16	0.16	0.0
July 26	E	46	55	7	0.00	0.37	0.37	0.0
July 27	C	46		3	0.00	0.32	0.32	0.0
July 28	C	58		2	0.00	0.15	0.15	0.0
July 29	E	88	91	13	0.00	0.45	0.45	0.0
July 30	E	75	64	12	0.14	0.55	0.69	0.3
July 31	C	38		4	0.05	0.25	0.30	0.2
August 1	E	46	50	6	0.20	0.45	0.65	0.5
August 2	E	38	25	5	0.00	0.33	0.33	0.0
August 3	E	46	45	12	0.00	0.34	0.34	0.0
August 4	E	50	60	9				
August 5	E	50	68	11	0.00	0.22	0.22	0.0
August 6	E	63	73	11	0.00	0.33	0.33	0.0
August 7	B	50	73	5	0.00	0.35	0.35	0.0
August 8	E	42	66	8	0.00	0.39	0.39	0.0
August 9	E	67	86	10	0.05	0.72	0.78	0.1
August 10	C	50		3				
August 11	7	33	58	5	0.08	0.46	0.54	0.2
August 12	E	33	66	7	0.00	0.29	0.29	0.0
August 13	7	25	34	7	0.00	0.28	0.28	0.0
August 14	E	71	60	16	0.08	0.59	0.67	0.1
August 15	B	75	94	10	0.00	0.13	0.13	0.0
August 16	C	29		5	0.00	0.11	0.11	0.0
August 17	1	63	64	7	0.00	0.00	0.00	
August 18	C	42		4				
August 19	7	38	67	6	0.27	0.44	0.71	0.6
August 20	C	33		4	0.00	0.10	0.10	0.0
August 21	B	38	64	6	0.09	0.10	0.19	0.8
August 22	C	42		3	0.00	0.10	0.10	0.0
August 23	3	96	99	9	0.00	0.00	0.00	
August 24	3	46	58	4				
August 25	E	71	89	13				
August 26	E	79	90	13	0.00	0.39	0.39	0.0
August 27	C	29		6	0.00	0.12	0.12	0.0
August 28	E	63	80	10	0.00	0.17	0.17	0.0
August 29	E	63	81	6	0.00	0.19	0.19	0.0
August 30	C	38		3	0.08	0.22	0.30	0.4
August 31	E	54	64	5	5.82	18.48*	24.29	0.3
September 1	E	96	99	14				
September 2	C	50		5	0.00	0.31	0.31	0.0
September 3	C	63		2	0.00	0.00	0.00	
September 4	E	21	34	11	0.00	0.06	0.06	0.0

* <-Indicates NAQO Maximun Acceptable Limit of 0.85 ug/m3 Exceeded

24 H Average Fluoride Concentration And Wind Data For 1988 Growing Season

Station : B
Sample Period Beginning At 1200

	WIND DATA				FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			
Date	D	%	CI	km/h	[Par]	[Gas]	[Tot]	[Par]/[Gas]
September 5	8	75	89	12	0.00	0.06	0.06	0.0
September 6	6	54	89	10	0.18	0.27	0.45	0.6
September 7	6	67	79	13	0.00	0.14	0.14	0.0
September 8	6	50	80	11				
September 9	6	83	89	13	0.05	0.31	0.36	0.2
September 10	8	96	99	8	0.00	0.07	0.07	0.0
September 11	C	38		4	0.23	0.15	0.38	1.6
September 12	6	75	81	12	0.05	0.10	0.15	0.5
September 13	8	54	72	10	0.18	0.21	0.40	0.9
September 14	8	83	87	7	0.00	0.11	0.11	0.0
September 15	C	46		4				
September 16	C	79		1	0.00	0.00	0.00	
September 17	6	29	37	5	0.00	0.26	0.26	0.0
September 18	C	67		2	0.00	0.08	0.08	0.0
September 19	3	63	78	6	0.00	0.07	0.07	0.0
September 20	6	71	92	14	0.07	0.41	0.48	0.2
September 21	8	88	97	9	0.00	0.00	0.00	
September 22	8	29	42	8	0.00	0.06	0.06	0.0
September 23	8	58	81	10	0.00	0.10	0.10	0.0
September 24	C	42		5	0.00	0.00	0.00	
September 25	7	33	65	8	0.06	0.16	0.22	0.4
September 26	C	42		4	0.00	0.05	0.05	0.0
September 27	6	38	59	13	0.00	0.26	0.26	0.0
September 28	1	50	49	5	0.00	0.00	0.00	
September 29	C	38		4				
September 30	6	100	100	19	0.00	0.13	0.13	0.0
October 1	6	96	96	21	0.00	0.28	0.28	0.0
October 2	1	54	75	5	0.00	0.25	0.25	0.0
October 3	2	50	59	5	0.00	0.00	0.00	
October 4	3	96	99	12	0.00	0.00	0.00	
October 5	3	46	62	8	0.00	0.00	0.00	
October 6	6	67	66	6	0.00	0.20	0.20	0.0
October 7	2	42	43	4	0.00	0.00	0.00	
October 8	C	46		5	0.00	0.00	0.00	
October 9	6	29	54	5	0.00	0.00	0.00	
October 10	6	67	88	18	0.00	0.29	0.29	0.0
October 11	7	100	100	19	0.00	0.00	0.00	
October 12	8	50	92	15	0.00	0.00	0.00	

Distribution Of 24h Fluoride Limits Exceeded In 1988 Growing Season
Station : B

Ontario's 24h Total Criteria of 1.72 ug/m3 was exceeded 2 times.
This represents 1.3 % of the data.

Ontario's 24h Gaseous Criteria of 0.86 ug/m3 was exceeded 5 times.
This represents 3.2 % of the data.

New York's 24h Gaseous Standard of 2.39 ug/m3 was exceeded 2 times.
This represents 1.3 % of the data.

Canada's 24h Gaseous Objective of 0.85 ug/m3 was exceeded 5 times.
This represents 3.2 % of the data.

Basic Statistics For 1 Day Data

Station : B
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 5.82 ug/m3
Arithmetic Mean : 0.08 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 13.19 %

Gaseous Fluorides

Maximum Value : 18.48 ug/m3
Arithmetic Mean : 0.37 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 13.19 %

Total Fluorides

Maximum Value : 24.29 ug/m3
Arithmetic Mean : 0.45 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 13.19 %

24 H Average Fluoride Concentration And Wind Data For 1988 Growing Season

Station : D
Sample Period Beginning At 1200

Date	WIND DATA D	%	CI	km/h	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	[Par]/[Gas]
April 14	6	38	82	17	0.49	0.57	1.05	0.9
April 15	6	58	77	11	0.17	0.25	0.43	0.7
April 16	8	83	95	14	0.00	0.00	0.00	
April 17	7	71	89	21	0.76	1.70*	2.46	0.4
April 18	7	100	100	22	0.85	1.00*	1.84	0.9
April 19	7	58	90	15	0.41	0.49	0.90	0.8
April 20	8	42	27	9	0.15	0.00	0.15	
April 21	8	88	96	12	0.00	0.00	0.00	
April 22	C	42		6	0.00	0.07	0.07	0.0
April 23	3	58	59	12	0.65	0.36	1.01	1.8
April 24	8	67	88	15	0.27	0.28	0.55	1.0
April 25	6	46	73	10	0.09	0.13	0.22	0.7
April 26	7	33	63	10				
April 27	8	88	97	13				
April 28	3	92	98	15	0.00	0.09	0.09	0.0
April 29	2	71	92	10	0.00	0.13	0.13	0.0
April 30	8	38	72	6	0.00	0.07	0.07	0.0
May 1	3	75	82	6	0.00	0.09	0.09	0.0
May 2	3	58	74	7	0.00	0.10	0.10	0.0
May 3	7	42	18	6	0.15	0.34	0.49	0.4
May 4	7	63	62	4	0.13	0.42	0.55	0.3
May 5	7	33	69	6	0.13	0.42	0.54	0.3
May 6	2	38	70	10	0.00	0.16	0.16	0.0
May 7	3	58	58	6	0.00	0.10	0.10	0.0
May 8	5	38	57	7	0.00	0.24	0.24	0.0
May 9	5	38	56	12	0.09	0.32	0.42	0.3
May 10	7	38	79	13				
May 11	8	38	32	6				
May 12	6	50	87	16	0.46	0.67	1.13	0.7
May 13	7	29	56	13	0.49	0.62	1.11	0.8
May 14	C	63		2	0.06	0.16	0.22	0.4
May 15	6	71	80	12	0.14	0.75	0.88	0.2
May 16	3	46	67	6	0.00	0.20	0.20	0.0
May 17	3	100	100	10	0.00	0.11	0.11	0.0
May 18	3	100	100	11	0.00	0.14	0.14	0.0
May 19	3	100	100	8	0.00	0.12	0.12	0.0
May 20	C	58		3	0.00	0.16	0.16	0.0
May 21	C	54		2	0.00	0.29	0.29	0.0
May 22	8	42	76	10	0.22	1.62*	1.85	0.1
May 23	8	33	60	6	0.08	0.32	0.40	0.3
May 24	8	38	70	8				
May 25	8	58	65	7	0.00	0.08	0.08	0.0
May 26	6	54	80	15				
May 27	6	58	90	13				
May 28	C	46		5				
May 29	C	58		3				
May 30	8	67	79	7				
May 31	8	79	88	6				

* <-Indicates NAQO Maximun Acceptable Limit of 0.85 ug/m3 Exceeded

24 H Average Fluoride Concentration And Wind Data For 1983 Growing Seasc

Station : D
Sample Period Beginning At 1200

Date	WIND DATA D	%	CI	km/h	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	[Par]/[Gas]
June 1	3	33	58	9				
June 2	C	54		4	0.00	0.10	0.10	0.0
June 3	C	38		4	0.15	0.33	0.47	0.5
June 4	7	46	81	7	0.40	1.16*	1.57	0.3
June 5	8	54	89	12	0.00	0.17	0.17	0.0
June 6	8	100	100	10	0.00	0.08	0.08	0.0
June 7	8	79	88	7	0.00	0.08	0.08	0.0
June 8	8	38	56	6	0.00	0.07	0.07	0.0
June 9	8	75	90	6	0.07	0.08	0.15	0.9
June 10	6	54	70	10	1.14	0.58	1.72	2.0
June 11	6	92	98	16	2.09	2.45*	4.54	0.9
June 12	6	75	94	14	2.66	2.10*	4.77	1.3
June 13	6	79	84	12	1.23	2.18*	3.40	0.6
June 14	6	79	95	14	0.90	3.16*	4.07	0.3
June 15	6	75	81	15	1.08	4.18*	5.26	0.3
June 16	C	29		6	0.11	0.18	0.29	0.7
June 17	7	42	61	4	0.22	0.43	0.65	0.5
June 18	6	71	89	9	0.48	0.91*	1.40	0.5
June 19	6	100	100	19	0.79	1.93*	2.72	0.4
June 20	6	46	60	11	1.31	1.99*	3.30	0.7
June 21	6	42	63	8	0.63	0.82	1.45	0.8
June 22	8	63	73	11	0.21	1.13*	1.35	0.2
June 23	8	33	68	7	0.39	0.42	0.81	0.9
June 24	7	25	41	5	0.05	0.21	0.26	0.2
June 25	8	29	44	15	0.07	0.63	0.70	0.1
June 26	8	58	76	6	0.06	0.22	0.28	0.3
June 27	6	46	68	11	0.72	0.84	1.56	0.9
June 28	6	50	66	11	0.42	1.20*	1.62	0.4
June 29	5	38	54	8	0.09	0.36	0.44	0.2
June 30	1	67	90	6				
July 1	C	42		3	0.00	0.15	0.15	0.0
July 2	8	38	66	7	0.21	0.87*	1.08	0.2
July 3	7	46	72	6	0.12	0.76	0.87	0.2
July 4	C	75		1	0.07	0.51	0.58	0.1
July 5	C	33		3	0.10	0.90*	1.00	0.1
July 6	C	42		3	0.08	0.60	0.68	0.1
July 7	7	54	92	7	0.20	1.36*	1.57	0.1
July 8	6	50	86	8	0.15	1.61*	1.76	0.1
July 9	7	38	50	4	0.04	0.63	0.68	0.1
July 10	6	54	90	13	0.11	1.55*	1.66	0.1
July 11	7	38	70	8	0.07	1.08*	1.15	0.1
July 12	C	42		4	0.08	0.34	0.42	0.2
July 13	6	33	57	9	0.12	0.57	0.69	0.2
July 14	1	42	59	6	0.00	0.32	0.32	0.0
July 15	8	29	18	5	0.04	0.19	0.23	0.2
July 16	3	58	38	6	0.00	0.40	0.40	0.0
July 17	C	38		4	0.00	0.55	0.55	0.0
July 18	C	33		5	0.06	0.78	0.84	0.1

* <-Indicates NAQO Maximun Acceptable Limit of 0.85 ug/m3 Exceeded

24 H Average Fluoride Concentration And Wind Data For 1988 Growing Season

Station : D
Sample Period Beginning At 1200

	WIND DATA				FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			
Date	D	%	CI	km/h	[Par]	[Gas]	[Tot]	[Par]/[Gas]
July 19	C	58		2	0.00	0.33	0.33	0.0
July 20	B	71	87	5	0.00	0.22	0.22	0.0
July 21	B	46	37	5	0.00	0.27	0.27	0.0
July 22	C	63		2	0.00	0.35	0.35	0.0
July 23	C	54		2	0.00	0.24	0.24	0.0
July 24	C	38		3				
July 25	C	58		2				
July 26	E	46	55	7	0.00	0.25	0.25	0.0
July 27	C	46		3	0.07	0.57	0.63	0.1
July 28	C	58		2	0.04	0.30	0.35	0.1
July 29	E	88	91	13	0.37	1.59*	1.97	0.2
July 30	E	75	64	12	0.75	2.37*	3.12	0.3
July 31	C	38		4	0.23	0.42	0.66	0.5
August 1	E	46	50	6	0.20	0.64	0.83	0.3
August 2	E	38	25	5	0.15	0.56	0.71	0.3
August 3	E	46	45	12	0.60	1.98*	2.59	0.3
August 4	E	50	60	9				
August 5	E	50	68	11				
August 6	E	63	73	11				
August 7	B	50	73	5				
August 8	E	42	66	8				
August 9	E	67	86	10				
August 10	C	50		3				
August 11	F	33	58	5	0.23	0.95*	1.19	0.2
August 12	E	33	66	7	0.13	0.88*	1.01	0.2
August 13	F	25	34	7				
August 14	E	71	60	16	0.00	0.32	0.32	0.0
August 15	B	75	94	10	0.90	4.25*	5.15	0.2
August 16	C	29		5	0.00	0.33	0.33	0.0
August 17	A	63	64	7				
August 18	C	42		4	0.10	0.20	0.30	0.5
August 19	F	38	67	6	0.51	0.78	1.29	0.7
August 20	C	33		4	0.00	0.25	0.25	0.0
August 21	B	38	64	6	0.16	0.21	0.37	0.8
August 22	C	42		3	0.00	0.20	0.20	0.0
August 23	B	96	99	9	0.00	0.12	0.12	0.0
August 24	B	46	58	4	0.00	0.09	0.09	0.0
August 25	E	71	89	13	0.12	0.31	0.43	0.4
August 26	E	79	90	13	0.45	1.71*	2.16	0.3
August 27	C	29		6	0.09	0.46	0.56	0.2
August 28	E	63	80	10	0.19	1.11*	1.29	0.2
August 29	E	63	81	6	0.16	0.41	0.57	0.4
August 30	C	38		3	0.17	0.42	0.59	0.4
August 31	E	54	64	5	0.00	0.48	0.48	0.0
September 1	E	96	99	14				
September 2	C	50		5	0.16	0.84	1.00	0.2
September 3	C	63		2	0.00	0.45	0.45	0.0
September 4	E	21	34	11	0.00	0.15	0.15	0.0

* <-Indicates NAQO Maximun Acceptable Limit of 0.85 ug/m3 Exceeded

24 H Average Fluoride Concentration And Wind Data For 1983 Growing Seasor

Station : D
Sample Period Beginning At 1200

Date	WIND DATA D	%	CI	km/h	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	[Par]/[Gas]
September 5	8	75	89	12	0.10	0.10	0.20	1.0
September 6	6	54	89	10				
September 7	6	67	79	13				
September 8	6	50	80	11	0.16	0.48	0.64	0.3
September 9	6	83	89	13	0.27	1.94*	2.21	0.1
September 10	8	96	99	8	0.00	0.13	0.13	0.0
September 11	C	38		4	0.58	0.92*	1.49	0.6
September 12	6	75	81	12	0.81	1.76*	2.57	0.5
September 13	8	54	72	10	0.00	0.24	0.24	0.0
September 14	8	83	87	7				
September 15	C	46		4	0.21	0.55	0.76	0.4
September 16	C	79		1	0.00	0.20	0.20	0.0
September 17	6	29	37	5	0.07	0.48	0.56	0.2
September 18	C	67		2	0.00	0.36	0.36	0.0
September 19	3	63	78	6	0.00	0.16	0.16	0.0
September 20	6	71	92	14	0.98	3.20*	4.18	0.3
September 21	8	88	97	9	0.00	0.18	0.18	0.0
September 22	8	29	42	8	0.05	0.31	0.36	0.2
September 23	8	58	81	10	0.15	0.40	0.55	0.4
September 24	C	42		5	0.00	0.21	0.21	0.0
September 25	7	33	65	8	0.28	0.65	0.93	0.4
September 26	C	42		4	0.00	0.09	0.09	0.0
September 27	6	38	59	13	0.34	0.99*	1.33	0.3
September 28	1	50	49	5	0.00	0.05	0.05	0.0
September 29	C	38		4	0.15	0.21	0.36	0.7
September 30	6	100	100	19	0.55	5.27*	5.83	0.1
October 1	6	96	96	21	0.20	2.99*	3.19	0.1
October 2	1	54	75	5	0.00	0.08	0.08	0.0
October 3	2	50	59	5	0.00	0.15	0.15	0.0
October 4	3	96	99	12	0.00	0.11	0.11	0.0
October 5	3	46	62	8	0.00	0.06	0.06	0.0
October 6	6	67	66	6	0.13	0.34	0.47	0.4
October 7	2	42	43	4				
October 8	C	46		5				
October 9	6	29	54	5	0.00	0.08	0.08	0.0
October 10	6	67	88	18	0.00	0.04	0.04	0.0
October 11	7	100	100	19	0.07	0.51	0.58	0.1
October 12	8	50	92	15	0.00	0.07	0.07	0.0

* <-Indicates NAQO Maximun Acceptable Limit of 0.85 ug/m3 Exceeded

Distribution Of 24h Fluoride Limits Exceeded In 1988 Growing Season
Station : D

Ontario's 24h Total Criteria of 1.72 ug/m3 was exceeded 21 times.
This represents 13.8 % of the data.

Ontario's 24h Gaseous Criteria of 0.86 ug/m3 was exceeded 35 times.
This represents 23.0 % of the data.

New York's 24h Gaseous Standard of 2.99 ug/m3 was exceeded 5 times.
This represents 3.3 % of the data.

Canada's 24h Gaseous Objective of 0.85 ug/m3 was exceeded 35 times.
This represents 23.0 % of the data.

Basic Statistics For 1 Day Data

Station : D
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 2.66 ug/m3
Arithmetic Mean : 0.22 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 16.48 %

Gaseous Fluorides

Maximum Value : 5.27 ug/m3
Arithmetic Mean : 0.67 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 16.48 %

Total Fluorides

Maximum Value : 5.83 ug/m3
Arithmetic Mean : 0.89 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 16.48 %

7 Day Fluoride Concentration Running Average For 1983 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD End Date	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	% DATA USED FOR AVERAGE Par	Gas
April 21	0.09	0.19	0.27	100	100
April 22	0.10	0.20	0.30	86	86
April 23	0.10	0.19	0.29	86	86
April 24	0.10	0.20	0.30	86	86
April 25	0.07	0.14	0.21	86	86
April 26	0.02	0.09	0.11	86	86
April 27	0.00	0.10	0.10	86	86
April 28	0.00	0.09	0.09	86	86
April 29	0.00	0.09	0.09	100	100
April 30	0.00	0.10	0.10	86	86
May 1	0.00	0.11	0.11	86	86
May 2	0.00	0.11	0.11	86	86
May 3	0.00	0.11	0.11	86	86
May 4	0.03	0.11	0.14	86	86
May 5	0.04	0.15	0.19	86	86
May 6	0.05	0.17	0.22	86	86
May 7	0.04	0.16	0.20	100	100
May 8	0.04	0.15	0.19	100	100
May 9	0.04	0.16	0.20	100	100
May 10	0.04	0.17	0.22	100	100
May 11	0.05	0.26	0.31	100	100
May 12	0.04	0.24	0.28	100	100
May 13	0.03	0.22	0.25	100	100
May 14	0.03	0.24	0.27	100	100
May 15	0.03	0.23	0.26	100	100
May 16	0.03	0.25	0.28	100	100
May 17	0.03	0.22	0.25	100	100
May 18	0.00	0.10	0.10	100	100
May 19	0.00	0.09	0.09	100	100
May 20	0.00	0.08	0.08	86	86
May 21	0.00	0.07	0.07	86	86
May 22	0.00	0.10	0.10	86	86
May 23	0.00	0.14	0.14	86	86
May 24	0.00	0.17	0.17	86	86
May 25	0.00	0.17	0.17	86	86
May 26	0.00	0.17	0.17	86	86
May 27	0.00	0.17	0.17	86	86
May 28	0.01	0.23	0.24	86	86
May 29	0.01	0.22	0.24	86	86
May 30	0.01	0.17	0.18	86	86
May 31	0.01	0.17	0.19	86	86
June 1	0.01	0.18	0.19	86	86
June 2	0.01	0.18	0.19	86	86
June 3	0.01	0.18	0.19	86	86
June 4	0.00	0.13	0.13	86	86
June 5	0.02	0.17	0.19	86	86
June 6	0.02	0.16	0.17	86	86
June 7	0.02	0.12	0.14	86	86

7 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : 8
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
June 8	0.02	0.11	0.12	86	86
June 9	0.02	0.11	0.12	86	86
June 10	0.01	0.09	0.11	100	100
June 11	0.04	0.11	0.15	100	100
June 12	0.04	0.11	0.15	100	100
June 13	0.09	0.23	0.32	100	100
June 14	0.11	0.32	0.43	100	100
June 15	0.13	0.44	0.57	100	100
June 16	0.31	1.49*	1.80	100	100
June 17	0.36	1.74*	2.10	86	86
June 18	0.39	2.03*	2.43	71	71
June 19	0.47	2.44*	2.91	57	57
June 20	0.51	2.94*	3.45	43	43
June 21	0.68	4.11*	4.78	29	29
June 22	1.22	7.35*	8.57	14	14
June 23				0	0
June 24				0	0
June 25	0.00	0.10	0.10	14	14
June 26	0.00	0.14	0.14	29	29
June 27	0.00	0.14	0.14	43	43
June 28	0.05	0.21	0.26	57	57
June 29	0.05	0.21	0.26	71	71
June 30	0.05	0.21	0.26	71	71
July 1	0.05	0.21	0.26	71	71
July 2	0.05	0.21	0.26	71	71
July 3	0.08	0.30	0.38	71	71
July 4	0.10	0.34	0.44	71	71
July 5	0.07	0.33	0.40	71	71
July 6	0.06	0.37	0.43	71	71
July 7	0.05	0.36	0.41	86	86
July 8	0.06	0.43	0.48	100	100
July 9	0.07	0.51	0.58	100	100
July 10	0.05	0.47	0.52	100	100
July 11	0.04	0.47	0.51	100	100
July 12	0.03	0.46	0.50	100	100
July 13	0.05	0.45	0.50	100	100
July 14	0.05	0.44	0.49	100	100
July 15	0.04	0.35	0.39	100	100
July 16	0.02	0.27	0.29	100	100
July 17	0.02	0.25	0.27	100	100
July 18	0.02	0.24	0.26	100	100
July 19	0.03	0.26	0.29	100	100
July 20	0.01	0.23	0.24	100	100
July 21	0.01	0.22	0.23	100	100
July 22	0.01	0.22	0.23	100	100
July 23	0.01	0.23	0.24	100	100
July 24	0.01	0.23	0.24	100	100
July 25	0.01	0.22	0.23	100	100

* <-Indicates NAQO Maximun Acceptable Limit of 0.55 ug/m3 Exceeded

7 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
July 26	0.00	0.18	0.18	100	100
July 27	0.00	0.21	0.21	100	100
July 28	0.00	0.23	0.23	100	100
July 29	0.00	0.22	0.22	100	100
July 30	0.00	0.26	0.26	100	100
July 31	0.02	0.32	0.34	100	100
August 1	0.03	0.32	0.35	100	100
August 2	0.06	0.36	0.42	100	100
August 3	0.06	0.36	0.41	100	100
August 4	0.06	0.36	0.42	100	100
August 5	0.07	0.39	0.46	86	86
August 6	0.07	0.36	0.42	86	86
August 7	0.04	0.32	0.36	86	86
August 8	0.03	0.34	0.37	86	86
August 9	0.00	0.33	0.33	86	86
August 10	0.01	0.39	0.40	86	86
August 11	0.01	0.40	0.41	71	71
August 12	0.02	0.41	0.43	86	86
August 13	0.02	0.42	0.45	86	86
August 14	0.02	0.42	0.44	86	86
August 15	0.04	0.45	0.49	86	86
August 16	0.04	0.41	0.45	86	86
August 17	0.03	0.31	0.34	86	86
August 18	0.02	0.26	0.29	100	100
August 19	0.01	0.23	0.25	86	86
August 20	0.06	0.26	0.32	86	86
August 21	0.06	0.23	0.29	86	86
August 22	0.06	0.15	0.20	86	86
August 23	0.06	0.14	0.20	86	86
August 24	0.06	0.12	0.18	86	86
August 25	0.07	0.15	0.22	71	71
August 26	0.07	0.15	0.22	71	71
August 27	0.02	0.14	0.15	71	71
August 28	0.02	0.14	0.16	71	71
August 29	0.00	0.15	0.15	71	71
August 30	0.00	0.17	0.17	71	71
August 31	0.02	0.22	0.23	71	71
September 1	0.98	3.26*	4.24	86	86
September 2	0.98	3.26*	4.24	86	86
September 3	0.98	3.25*	4.23	86	86
September 4	0.98	3.23*	4.21	86	86
September 5	0.98	3.21*	4.19	86	86
September 6	0.98	3.19*	4.17	86	86
September 7	1.00	3.20*	4.20	86	86
September 8	0.03	0.14	0.17	86	86
September 9	0.03	0.14	0.17	86	86
September 10	0.04	0.14	0.18	86	86
September 11	0.04	0.15	0.19	86	86

* <-Indicates NAQO Maximun Acceptable Limit of 0.55 ug/m3 Exceeded

7 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
September 12	0.08	0.17	0.24	86	86
September 13	0.09	0.17	0.26	86	86
September 14	0.09	0.16	0.25	86	86
September 15	0.09	0.16	0.25	86	86
September 16	0.09	0.16	0.25	86	86
September 17	0.08	0.11	0.19	86	86
September 18	0.08	0.14	0.22	86	86
September 19	0.04	0.13	0.17	86	86
September 20	0.03	0.12	0.15	86	86
September 21	0.01	0.15	0.17	86	86
September 22	0.01	0.14	0.15	86	86
September 23	0.01	0.13	0.14	100	100
September 24	0.01	0.14	0.15	100	100
September 25	0.01	0.10	0.11	100	100
September 26	0.02	0.11	0.13	100	100
September 27	0.02	0.11	0.13	100	100
September 28	0.01	0.09	0.10	100	100
September 29	0.01	0.09	0.10	100	100
September 30	0.01	0.09	0.11	86	86
October 1	0.01	0.10	0.11	86	86
October 2	0.01	0.15	0.16	86	86
October 3	0.00	0.16	0.16	86	86
October 4	0.00	0.15	0.15	86	86
October 5	0.00	0.11	0.11	86	86
October 6	0.00	0.11	0.11	86	86
October 7	0.00	0.12	0.12	100	100
October 8	0.00	0.10	0.10	100	100
October 9	0.00	0.06	0.06	100	100
October 10	0.00	0.03	0.03	100	100
October 11	0.00	0.07	0.07	100	100
October 12	0.00	0.07	0.07	100	100

Distribution Of 7 Day Fluoride Limits Exceeded In 1988 Growing Season
Station : B

New York's 7 Day Gaseous Standard of 1.73 ug/m3 was exceeded 13 times.
This represents 7.5 % of the data.

Canada's 7 Day Gaseous Objective of 0.55 ug/m3 was exceeded 14 times.
This represents 8.1 % of the data.

Basic Statistics For 7 Day Data

Station : B
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 1.22 ug/m3
Arithmetic Mean : 0.09 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 1.14 %

Gaseous Fluorides

Maximum Value : 7.35 ug/m3
Arithmetic Mean : 0.45 ug/m3
Minimum Value : 0.03 ug/m3
Missing Data : 1.14 %

Total Fluorides

Maximum Value : 8.57 ug/m3
Arithmetic Mean : 0.54 ug/m3
Minimum Value : 0.03 ug/m3
Missing Data : 1.14 %

7 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
April 21	0.40	0.57*	0.98	100	100
April 22	0.33	0.49	0.83	100	100
April 23	0.31	0.47	0.78	100	100
April 24	0.40	0.52	0.92	100	100
April 25	0.33	0.31	0.65	100	100
April 26	0.22	0.19	0.41	100	100
April 27	0.19	0.14	0.33	86	86
April 28	0.20	0.17	0.37	71	71
April 29	0.20	0.19	0.39	71	71
April 30	0.20	0.20	0.40	71	71
May 1	0.07	0.14	0.21	71	71
May 2	0.02	0.10	0.12	71	71
May 3	0.00	0.10	0.10	71	71
May 4	0.02	0.14	0.16	86	86
May 5	0.04	0.18	0.22	100	100
May 6	0.06	0.22	0.28	100	100
May 7	0.06	0.23	0.29	100	100
May 8	0.06	0.23	0.29	100	100
May 9	0.06	0.25	0.31	100	100
May 10	0.07	0.28	0.36	100	100
May 11	0.06	0.28	0.34	86	86
May 12	0.04	0.25	0.29	71	71
May 13	0.11	0.30	0.41	71	71
May 14	0.21	0.39	0.60	71	71
May 15	0.22	0.40	0.62	71	71
May 16	0.25	0.50	0.75	71	71
May 17	0.23	0.48	0.71	71	71
May 18	0.19	0.42	0.61	86	86
May 19	0.16	0.38	0.54	100	100
May 20	0.10	0.30	0.40	100	100
May 21	0.03	0.24	0.26	100	100
May 22	0.02	0.25	0.27	100	100
May 23	0.03	0.38	0.41	100	100
May 24	0.04	0.40	0.44	100	100
May 25	0.05	0.44	0.49	86	86
May 26	0.05	0.43	0.48	86	86
May 27	0.06	0.49	0.55	71	71
May 28	0.08	0.58*	0.65	57	57
May 29	0.10	0.67*	0.77	43	43
May 30	0.04	0.20	0.24	29	29
May 31	0.00	0.08	0.08	14	14
June 1	0.00	0.08	0.08	14	14
June 2				0	0
June 3	0.00	0.10	0.10	14	14
June 4	0.07	0.21	0.29	29	29
June 5	0.18	0.53	0.71	43	43
June 6	0.14	0.44	0.58	57	57
June 7	0.11	0.37	0.48	71	71

* <-Indicates NAQO Maximun Acceptable Limit of 0.55 ug/m3 Exceeded

7 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
June 8	0.09	0.32	0.41	86	86
June 9	0.08	0.28	0.36	100	100
June 10	0.09	0.28	0.37	100	100
June 11	0.23	0.32	0.55	100	100
June 12	0.47	0.50	0.97	100	100
June 13	0.85	0.78*	1.63	100	100
June 14	1.03	1.08*	2.10	100	100
June 15	1.15	1.52*	2.67	100	100
June 16	1.31	2.11*	3.41	100	100
June 17	1.32	2.12*	3.43	100	100
June 18	1.18	2.10*	3.28	100	100
June 19	0.96	1.88*	2.83	100	100
June 20	0.69	1.85*	2.54	100	100
June 21	0.70	1.83*	2.53	100	100
June 22	0.66	1.49*	2.15	100	100
June 23	0.54	1.06*	1.59	100	100
June 24	0.58	1.09*	1.67	100	100
June 25	0.55	1.06*	1.61	100	100
June 26	0.49	1.02*	1.51	100	100
June 27	0.39	0.77*	1.16	100	100
June 28	0.31	0.61*	0.92	100	100
June 29	0.28	0.66*	0.94	100	100
June 30	0.26	0.55*	0.81	100	100
July 1	0.24	0.58*	0.81	86	86
July 2	0.23	0.57*	0.79	86	86
July 3	0.25	0.60*	0.86	86	86
July 4	0.26	0.69*	0.95	86	86
July 5	0.15	0.64*	0.79	86	86
July 6	0.10	0.59*	0.69	86	86
July 7	0.10	0.63*	0.73	86	86
July 8	0.11	0.73*	0.85	100	100
July 9	0.13	0.94*	1.08	100	100
July 10	0.11	0.91*	1.02	100	100
July 11	0.11	1.02*	1.13	100	100
July 12	0.11	1.11*	1.21	100	100
July 13	0.11	1.02*	1.13	100	100
July 14	0.11	1.02*	1.13	100	100
July 15	0.08	0.87*	0.95	100	100
July 16	0.07	0.67*	0.73	100	100
July 17	0.06	0.63*	0.69	100	100
July 18	0.04	0.49	0.54	100	100
July 19	0.04	0.45	0.49	100	100
July 20	0.03	0.45	0.48	100	100
July 21	0.01	0.40	0.41	100	100
July 22	0.01	0.39	0.40	100	100
July 23	0.01	0.41	0.42	100	100
July 24	0.01	0.39	0.40	100	100
July 25	0.01	0.37	0.38	86	86

* <-Indicates NAQO Maximun Acceptable Limit of 0.55 ug/m3 Exceeded

7 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
July 26	0.00	0.28	0.28	71	71
July 27	0.00	0.27	0.27	71	71
July 28	0.01	0.34	0.35	71	71
July 29	0.02	0.34	0.37	71	71
July 30	0.10	0.59*	0.69	71	71
July 31	0.25	1.02*	1.26	71	71
August 1	0.25	0.92*	1.16	86	86
August 2	0.24	0.88*	1.12	100	100
August 3	0.26	0.92*	1.18	100	100
August 4	0.34	1.12*	1.46	100	100
August 5	0.38	1.26*	1.64	86	86
August 6	0.39	1.19*	1.58	71	71
August 7	0.29	0.90*	1.20	57	57
August 8	0.32	1.06*	1.38	43	43
August 9	0.38	1.27*	1.65	29	29
August 10	0.60	1.98*	2.59	14	14
August 11				0	0
August 12	0.23	0.95*	1.19	14	14
August 13	0.18	0.92*	1.10	29	29
August 14	0.18	0.92*	1.10	29	29
August 15	0.12	0.72*	0.84	43	43
August 16	0.32	1.60*	1.92	57	57
August 17	0.25	1.35*	1.60	71	71
August 18	0.25	1.35*	1.60	71	71
August 19	0.23	1.20*	1.42	71	71
August 20	0.30	1.18*	1.48	71	71
August 21	0.25	1.02*	1.27	86	86
August 22	0.28	1.00*	1.28	86	86
August 23	0.13	0.33	0.46	86	86
August 24	0.13	0.29	0.42	86	86
August 25	0.11	0.26	0.37	100	100
August 26	0.11	0.28	0.39	100	100
August 27	0.10	0.41	0.52	100	100
August 28	0.12	0.44	0.56	100	100
August 29	0.12	0.57*	0.69	100	100
August 30	0.14	0.60*	0.74	100	100
August 31	0.17	0.64*	0.81	100	100
September 1	0.17	0.70*	0.87	100	100
September 2	0.18	0.76*	0.94	86	86
September 3	0.13	0.62*	0.75	86	86
September 4	0.11	0.62*	0.73	86	86
September 5	0.08	0.46	0.54	86	86
September 6	0.07	0.41	0.48	86	86
September 7	0.05	0.40	0.46	71	71
September 8	0.07	0.39	0.45	57	57
September 9	0.08	0.40	0.49	71	71
September 10	0.11	0.62*	0.73	71	71
September 11	0.11	0.56*	0.67	71	71

* <-Indicates NAQO Maximun Acceptable Limit of 0.55 ug/m3 Exceeded

7 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
September 12	0.22	0.71*	0.93	71	71
September 13	0.36	1.04*	1.41	71	71
September 14	0.30	0.91*	1.21	86	86
September 15	0.30	0.91*	1.21	86	86
September 16	0.31	0.92*	1.23	86	86
September 17	0.27	0.63*	0.90	86	86
September 18	0.28	0.69*	0.97	86	86
September 19	0.18	0.60*	0.78	86	86
September 20	0.05	0.33	0.38	86	86
September 21	0.21	0.83*	1.04	86	86
September 22	0.18	0.73*	0.91	100	100
September 23	0.16	0.70*	0.86	100	100
September 24	0.18	0.73*	0.91	100	100
September 25	0.17	0.69*	0.86	100	100
September 26	0.21	0.73*	0.94	100	100
September 27	0.21	0.72*	0.93	100	100
September 28	0.12	0.40	0.52	100	100
September 29	0.12	0.39	0.50	100	100
September 30	0.13	0.37	0.50	100	100
October 1	0.19	1.07*	1.26	100	100
October 2	0.22	1.46*	1.68	100	100
October 3	0.18	1.38*	1.56	100	100
October 4	0.18	1.39*	1.57	100	100
October 5	0.13	1.26*	1.39	100	100
October 6	0.13	1.27*	1.40	100	100
October 7	0.13	1.29*	1.41	100	100
October 8	0.06	0.62*	0.68	86	86
October 9	0.03	0.15	0.17	71	71
October 10	0.03	0.15	0.17	71	71
October 11	0.03	0.13	0.15	71	71
October 12	0.04	0.21	0.25	71	71

* <-Indicates NAQO Maximun Acceptable Limit of 0.55 ug/m3 Exceeded

Distribution Of 7 Day Fluoride Limits Exceeded In 1988 Growing Season
Station : D

New York's 7 Day Gaseous Standard of 1.73 ug/m3 was exceeded 7 times.
This represents 4.0 % of the data.

Canada's 7 Day Gaseous Objective of 0.55 ug/m3 was exceeded 93 times.
This represents 53.8 % of the data.

Basic Statistics For 7 Day Data

Station : D
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 1.32 ug/m3
Arithmetic Mean : 0.21 ug/m3
Minimum Value : 0.00 ug/m3
Missing Data : 1.14 %

Gaseous Fluorides

Maximum Value : 2.12 ug/m3
Arithmetic Mean : 0.67 ug/m3
Minimum Value : 0.08 ug/m3
Missing Data : 1.14 %

Total Fluorides

Maximum Value : 3.43 ug/m3
Arithmetic Mean : 0.88 ug/m3
Minimum Value : 0.08 ug/m3
Missing Data : 1.14 %

30 Day Fluoride Concentration Running Average For 1980 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD End Date	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	% DATA USED FOR AVERAGE Par	Gas
May 14	0.04	0.17	0.21	93	93
May 15	0.04	0.17	0.21	93	93
May 16	0.04	0.17	0.21	93	93
May 17	0.04	0.17	0.21	93	93
May 18	0.03	0.16	0.19	93	93
May 19	0.02	0.14	0.17	93	93
May 20	0.02	0.14	0.16	90	90
May 21	0.02	0.14	0.16	90	90
May 22	0.02	0.14	0.16	93	93
May 23	0.02	0.16	0.18	93	93
May 24	0.02	0.16	0.18	93	93
May 25	0.02	0.16	0.18	93	93
May 26	0.02	0.16	0.18	93	93
May 27	0.02	0.16	0.18	90	90
May 28	0.02	0.17	0.20	90	90
May 29	0.02	0.18	0.20	90	90
May 30	0.02	0.17	0.20	93	93
May 31	0.02	0.18	0.20	93	93
June 1	0.02	0.18	0.20	93	93
June 2	0.02	0.17	0.20	93	93
June 3	0.02	0.17	0.19	90	90
June 4	0.01	0.17	0.18	90	90
June 5	0.01	0.18	0.19	90	90
June 6	0.01	0.17	0.19	90	90
June 7	0.01	0.17	0.19	90	90
June 8	0.01	0.17	0.18	90	90
June 9	0.01	0.16	0.18	90	90
June 10	0.01	0.13	0.13	90	90
June 11	0.01	0.13	0.15	90	90
June 12	0.02	0.15	0.16	90	90
June 13	0.03	0.17	0.20	90	90
June 14	0.04	0.19	0.23	90	90
June 15	0.04	0.22	0.26	90	90
June 16	0.09	0.49*	0.58	90	90
June 17	0.09	0.51*	0.60	87	87
June 18	0.09	0.53*	0.62	83	83
June 19	0.09	0.53*	0.62	83	83
June 20	0.10	0.54*	0.64	80	80
June 21	0.10	0.56*	0.66	77	77
June 22	0.11	0.56*	0.67	73	73
June 23	0.11	0.58*	0.69	70	70
June 24	0.12	0.61*	0.72	67	67
June 25	0.12	0.61*	0.73	67	67
June 26	0.11	0.59*	0.70	70	70
June 27	0.11	0.58*	0.68	70	70
June 28	0.12	0.59*	0.71	70	70
June 29	0.12	0.59*	0.71	70	70
June 30	0.12	0.61*	0.74	67	67

* <-Indicates NAQO Maximun Acceptable Limit of 0.35 ug/m3 Exceeded

30 Day Fluoride Concentration Running Average For 1983 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
July 1	0.13	0.64*	0.77	63	63
July 2	0.13	0.64*	0.78	63	63
July 3	0.13	0.64*	0.78	67	67
July 4	0.14	0.65*	0.79	67	67
July 5	0.13	0.65*	0.79	67	67
July 6	0.13	0.67*	0.80	67	67
July 7	0.13	0.68*	0.82	67	67
July 8	0.14	0.72*	0.86	67	67
July 9	0.15	0.76*	0.90	67	67
July 10	0.15	0.77*	0.92	67	67
July 11	0.14	0.78*	0.92	67	67
July 12	0.13	0.78*	0.91	67	67
July 13	0.12	0.74*	0.87	67	67
July 14	0.11	0.73*	0.84	67	67
July 15	0.11	0.69*	0.80	67	67
July 16	0.05	0.33	0.38	67	67
July 17	0.04	0.32	0.37	70	70
July 18	0.04	0.32	0.36	73	73
July 19	0.04	0.33	0.37	77	77
July 20	0.04	0.32	0.36	80	80
July 21	0.04	0.31	0.35	83	83
July 22	0.04	0.31	0.35	87	87
July 23	0.04	0.31	0.34	90	90
July 24	0.03	0.30	0.33	93	93
July 25	0.03	0.30	0.34	93	93
July 26	0.03	0.30	0.34	93	93
July 27	0.03	0.31	0.35	93	93
July 28	0.03	0.31	0.34	93	93
July 29	0.03	0.31	0.33	93	93
July 30	0.02	0.31	0.34	97	97
July 31	0.03	0.32	0.35	100	100
August 1	0.03	0.32	0.35	100	100
August 2	0.03	0.32	0.35	100	100
August 3	0.03	0.32	0.35	100	100
August 4	0.03	0.32	0.34	100	100
August 5	0.03	0.31	0.34	97	97
August 6	0.03	0.31	0.34	97	97
August 7	0.02	0.29	0.32	97	97
August 8	0.02	0.28	0.30	97	97
August 9	0.02	0.28	0.31	97	97
August 10	0.02	0.30	0.32	97	97
August 11	0.02	0.29	0.32	93	93
August 12	0.02	0.30	0.32	93	93
August 13	0.02	0.30	0.32	93	93
August 14	0.02	0.30	0.33	93	93
August 15	0.02	0.32	0.35	93	93
August 16	0.02	0.32	0.34	93	93
August 17	0.02	0.31	0.34	93	93

* <-Indicates NAQO Maximun Acceptable Limit of 0.35 ug/m3 Exceeded

30 Day Fluoride Concentration Running Average For 1980 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
August 18	0.02	0.30	0.32	93	93
August 19	0.02	0.30	0.32	90	90
August 20	0.03	0.31	0.35	90	90
August 21	0.03	0.31	0.34	90	90
August 22	0.04	0.31	0.34	90	90
August 23	0.04	0.30	0.34	90	90
August 24	0.04	0.30	0.33	90	90
August 25	0.04	0.30	0.34	87	87
August 26	0.04	0.30	0.34	83	83
August 27	0.04	0.30	0.34	83	83
August 28	0.04	0.30	0.34	83	83
August 29	0.04	0.29	0.33	83	83
August 30	0.03	0.27	0.31	83	83
August 31	0.03	0.27	0.31	83	83
September 1	0.26	0.99*	1.25	83	83
September 2	0.27	1.02*	1.29	80	80
September 3	0.27	1.02*	1.29	80	80
September 4	0.26	0.98*	1.24	83	83
September 5	0.26	0.97*	1.23	83	83
September 6	0.26	0.96*	1.22	83	83
September 7	0.27	0.96*	1.22	83	83
September 8	0.27	0.95*	1.21	83	83
September 9	0.27	0.96*	1.23	80	80
September 10	0.27	0.93*	1.20	83	83
September 11	0.26	0.92*	1.18	83	83
September 12	0.27	0.91*	1.18	83	83
September 13	0.27	0.90*	1.18	83	83
September 14	0.28	0.89*	1.17	83	83
September 15	0.28	0.89*	1.17	83	83
September 16	0.29	0.92*	1.21	80	80
September 17	0.29	0.92*	1.21	80	80
September 18	0.28	0.89*	1.17	83	83
September 19	0.27	0.88*	1.15	83	83
September 20	0.27	0.88*	1.15	83	83
September 21	0.27	0.89*	1.16	83	83
September 22	0.27	0.89*	1.15	83	83
September 23	0.27	0.89*	1.16	83	83
September 24	0.26	0.86*	1.12	87	87
September 25	0.25	0.83*	1.07	90	90
September 26	0.25	0.82*	1.07	90	90
September 27	0.25	0.82*	1.07	90	90
September 28	0.25	0.82*	1.07	90	90
September 29	0.25	0.81*	1.06	90	90
September 30	0.26	0.84*	1.09	87	87
October 1	0.03	0.13	0.16	87	87
October 2	0.03	0.14	0.17	90	90
October 3	0.03	0.13	0.16	90	90
October 4	0.03	0.13	0.16	90	90

* <-Indicates NAQO Maximun Acceptable Limit of 0.35 ug/m3 Exceeded

30 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
October 5	0.03	0.13	0.16	90	90
October 6	0.03	0.13	0.16	90	90
October 7	0.02	0.13	0.15	90	90
October 8	0.02	0.12	0.14	90	90
October 9	0.02	0.12	0.14	93	93
October 10	0.02	0.11	0.13	93	93
October 11	0.02	0.11	0.13	93	93
October 12	0.01	0.11	0.12	93	93

Distribution Of 30 Day Fluoride Limits Exceeded In 1988 Growing Season
Station : B

Ontario's 30 Day Total Criteria of 0.68 ug/m3 was exceeded 53 times.
This represents 34.9 % of the data.

Ontario's 30 Day Gaseous Criteria of 0.34 ug/m3 was exceeded 60 times.
This represents 39.5 % of the data.

New York's 30 Day Gaseous Standard of 0.84 ug/m3 was exceeded 24 times.
This represents 15.8 % of the data.

Canada's 30 Day Gaseous Objective of 0.35 ug/m3 was exceeded 60 times.
This represents 39.5 % of the data.

Basic Statistics For 30 Day Data

Station : B
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 0.29 ug/m3
Arithmetic Mean : 0.09 ug/m3
Minimum Value : 0.01 ug/m3
Missing Data : 0.00 %

Gaseous Fluorides

Maximum Value : 1.02 ug/m3
Arithmetic Mean : 0.44 ug/m3
Minimum Value : 0.11 ug/m3
Missing Data : 0.00 %

Total Fluorides

Maximum Value : 1.29 ug/m3
Arithmetic Mean : 0.54 ug/m3
Minimum Value : 0.12 ug/m3
Missing Data : 0.00 %

30 Day Fluoride Concentration Running Average For 1983 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD End Date	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	% DATA USED FOR AVERAGE Par	Gas
May 14	0.20	0.33	0.53	87	87
May 15	0.19	0.32	0.50	87	87
May 16	0.19	0.33	0.52	87	87
May 17	0.19	0.34	0.53	87	87
May 18	0.16	0.28	0.44	87	87
May 19	0.12	0.25	0.37	87	87
May 20	0.11	0.23	0.34	87	87
May 21	0.10	0.24	0.34	87	87
May 22	0.10	0.25	0.35	87	87
May 23	0.11	0.31	0.42	87	87
May 24	0.09	0.31	0.40	87	87
May 25	0.08	0.31	0.39	83	83
May 26	0.08	0.31	0.39	83	83
May 27	0.08	0.31	0.39	83	83
May 28	0.08	0.31	0.39	83	83
May 29	0.08	0.32	0.40	80	80
May 30	0.09	0.33	0.41	77	77
May 31	0.09	0.34	0.43	73	73
June 1	0.09	0.35	0.44	70	70
June 2	0.10	0.36*	0.46	67	67
June 3	0.09	0.35*	0.44	67	67
June 4	0.09	0.35	0.44	67	67
June 5	0.10	0.38*	0.49	67	67
June 6	0.10	0.38*	0.49	67	67
June 7	0.10	0.38*	0.49	67	67
June 8	0.10	0.37*	0.48	67	67
June 9	0.10	0.36*	0.46	67	67
June 10	0.10	0.35	0.45	70	70
June 11	0.15	0.36*	0.50	73	73
June 12	0.22	0.44*	0.66	73	73
June 13	0.32	0.51*	0.83	73	73
June 14	0.37	0.60*	0.97	73	73
June 15	0.41	0.71*	1.11	73	73
June 16	0.46	0.89*	1.34	73	73
June 17	0.46	0.89*	1.35	73	73
June 18	0.47	0.91*	1.38	73	73
June 19	0.49	0.94*	1.43	73	73
June 20	0.53	1.02*	1.55	73	73
June 21	0.59	1.10*	1.69	73	73
June 22	0.61	1.06*	1.67	73	73
June 23	0.61	1.10*	1.71	73	73
June 24	0.60	1.07*	1.67	77	77
June 25	0.61	1.08*	1.68	77	77
June 26	0.58	1.06*	1.64	80	80
June 27	0.56	1.02*	1.59	83	83
June 28	0.57	1.02*	1.59	87	87
June 29	0.56	1.02*	1.59	90	90
June 30	0.55	1.00*	1.55	93	93

* <-Indicates NAQO Maximun Acceptable Limit of 0.35 ug/m3 Exceeded

30 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
July 1	0.55	1.00*	1.55	93	93
July 2	0.53	0.97*	1.50	97	97
July 3	0.53	1.00*	1.53	97	97
July 4	0.53	1.01*	1.54	97	97
July 5	0.52	0.99*	1.51	97	97
July 6	0.53	1.01*	1.54	97	97
July 7	0.53	1.03*	1.56	97	97
July 8	0.53	1.08*	1.61	97	97
July 9	0.54	1.13*	1.67	97	97
July 10	0.54	1.15*	1.69	97	97
July 11	0.50	1.18*	1.69	97	97
July 12	0.43	1.13*	1.57	97	97
July 13	0.35	1.07*	1.42	97	97
July 14	0.31	1.02*	1.33	97	97
July 15	0.28	0.92*	1.20	97	97
July 16	0.24	0.78*	1.02	97	97
July 17	0.24	0.79*	1.03	97	97
July 18	0.23	0.79*	1.02	97	97
July 19	0.21	0.79*	1.00	97	97
July 20	0.19	0.73*	0.92	97	97
July 21	0.14	0.67*	0.82	97	97
July 22	0.12	0.65*	0.77	97	97
July 23	0.11	0.63*	0.74	97	97
July 24	0.10	0.62*	0.72	97	97
July 25	0.10	0.64*	0.74	93	93
July 26	0.10	0.64*	0.74	90	90
July 27	0.10	0.64*	0.74	90	90
July 28	0.08	0.63*	0.70	90	90
July 29	0.06	0.59*	0.66	90	90
July 30	0.07	0.64*	0.71	90	90
July 31	0.10	0.70*	0.80	93	93
August 1	0.10	0.71*	0.82	93	93
August 2	0.10	0.70*	0.81	93	93
August 3	0.10	0.70*	0.80	93	93
August 4	0.12	0.75*	0.87	93	93
August 5	0.13	0.74*	0.87	90	90
August 6	0.13	0.75*	0.88	87	87
August 7	0.12	0.72*	0.85	83	83
August 8	0.12	0.69*	0.81	80	80
August 9	0.13	0.69*	0.82	77	77
August 10	0.13	0.65*	0.78	73	73
August 11	0.13	0.63*	0.76	70	70
August 12	0.14	0.66*	0.80	70	70
August 13	0.14	0.67*	0.81	70	70
August 14	0.14	0.69*	0.84	67	67
August 15	0.14	0.70*	0.84	67	67
August 16	0.19	0.89*	1.08	67	67
August 17	0.19	0.88*	1.07	67	67

* <-Indicates NAQO Maximun Acceptable Limit of 0.35 ug/m3 Exceeded

30 Day Fluoride Concentration Running Average For 1983 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
August 18	0.19	0.89*	1.08	63	63
August 19	0.20	0.88*	1.08	63	63
August 20	0.23	0.91*	1.13	63	63
August 21	0.23	0.91*	1.13	63	63
August 22	0.23	0.90*	1.13	63	63
August 23	0.23	0.90*	1.13	63	63
August 24	0.22	0.86*	1.08	67	67
August 25	0.21	0.82*	1.03	70	70
August 26	0.22	0.83*	1.04	70	70
August 27	0.24	0.88*	1.12	70	70
August 28	0.24	0.89*	1.13	70	70
August 29	0.23	0.86*	1.09	70	70
August 30	0.20	0.77*	0.97	70	70
August 31	0.20	0.77*	0.97	70	70
September 1	0.19	0.76*	0.95	70	70
September 2	0.19	0.77*	0.96	67	67
September 3	0.17	0.72*	0.88	67	67
September 4	0.16	0.70*	0.86	70	70
September 5	0.15	0.68*	0.83	73	73
September 6	0.15	0.65*	0.80	77	77
September 7	0.15	0.65*	0.80	77	77
September 8	0.15	0.65*	0.80	77	77
September 9	0.15	0.65*	0.80	80	80
September 10	0.16	0.70*	0.85	83	83
September 11	0.15	0.66*	0.81	83	83
September 12	0.16	0.67*	0.83	83	83
September 13	0.19	0.71*	0.90	87	87
September 14	0.19	0.71*	0.89	87	87
September 15	0.16	0.56*	0.72	83	83
September 16	0.17	0.57*	0.74	83	83
September 17	0.16	0.56*	0.72	87	87
September 18	0.16	0.57*	0.73	87	87
September 19	0.14	0.55*	0.70	87	87
September 20	0.14	0.55*	0.69	87	87
September 21	0.17	0.66*	0.84	87	87
September 22	0.17	0.66*	0.84	87	87
September 23	0.18	0.67*	0.85	87	87
September 24	0.18	0.68*	0.86	87	87
September 25	0.18	0.68*	0.86	87	87
September 26	0.17	0.64*	0.81	87	87
September 27	0.17	0.62*	0.79	87	87
September 28	0.17	0.62*	0.79	87	87
September 29	0.17	0.61*	0.77	87	87
September 30	0.17	0.60*	0.76	87	87
October 1	0.19	0.78*	0.97	87	87
October 2	0.19	0.86*	1.05	90	90
October 3	0.18	0.84*	1.02	90	90
October 4	0.18	0.82*	1.01	90	90

* <-Indicates NAQO Maximun Acceptable Limit of 0.35 ug/m3 Exceeded

30 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
October 5	0.18	0.82*	1.00	90	90
October 6	0.18	0.82*	1.00	90	90
October 7	0.18	0.80*	0.98	93	93
October 8	0.18	0.80*	0.98	93	93
October 9	0.18	0.82*	0.99	90	90
October 10	0.17	0.75*	0.91	90	90
October 11	0.17	0.74*	0.91	90	90
October 12	0.15	0.73*	0.88	90	90

* <-Indicates NAQO Maximun Acceptable Limit of 0.35 ug/m3 Exceeded

Distribution Of 30 Day Fluoride Limits Exceeded In 1988 Growing Season
Station : D

Ontario's 30 Day Total Criteria of 0.68 ug/m3 was exceeded 121 times.
This represents 79.6 % of the data.

Ontario's 30 Day Gaseous Criteria of 0.34 ug/m3 was exceeded 135 times.
This represents 88.8 % of the data.

New York's 30 Day Gaseous Standard of 0.84 ug/m3 was exceeded 43 times.
This represents 28.3 % of the data.

Canada's 30 Day Gaseous Objective of 0.35 ug/m3 was exceeded 131 times.
This represents 86.2 % of the data.

Basic Statistics For 30 Day Data

Station : D
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 0.61 ug/m3
Arithmetic Mean : 0.23 ug/m3
Minimum Value : 0.06 ug/m3
Missing Data : 0.00 %

Gaseous Fluorides

Maximum Value : 1.18 ug/m3
Arithmetic Mean : 0.70 ug/m3
Minimum Value : 0.23 ug/m3
Missing Data : 0.00 %

Total Fluorides

Maximum Value : 1.71 ug/m3
Arithmetic Mean : 0.93 ug/m3
Minimum Value : 0.34 ug/m3
Missing Data : 0.00 %

70 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
June 23	0.06	0.31*	0.37	83	83
June 24	0.06	0.32*	0.38	81	81
June 25	0.06	0.32*	0.38	81	81
June 26	0.06	0.32*	0.38	81	81
June 27	0.06	0.32*	0.37	81	81
June 28	0.06	0.32*	0.37	81	81
June 29	0.05	0.32*	0.37	81	81
June 30	0.05	0.32*	0.38	80	80
July 1	0.05	0.32*	0.38	80	80
July 2	0.05	0.32*	0.38	80	80
July 3	0.06	0.33*	0.39	80	80
July 4	0.06	0.34*	0.40	80	80
July 5	0.06	0.34*	0.40	80	80
July 6	0.06	0.35*	0.41	80	80
July 7	0.06	0.35*	0.41	80	80
July 8	0.06	0.36*	0.43	80	80
July 9	0.06	0.37*	0.43	81	81
July 10	0.06	0.37*	0.43	81	81
July 11	0.06	0.38*	0.44	81	81
July 12	0.06	0.38*	0.44	81	81
July 13	0.06	0.38*	0.45	81	81
July 14	0.06	0.38*	0.44	81	81
July 15	0.06	0.38*	0.44	81	81
July 16	0.06	0.38*	0.44	81	81
July 17	0.06	0.38*	0.44	81	81
July 18	0.06	0.39*	0.45	81	81
July 19	0.06	0.39*	0.45	81	81
July 20	0.06	0.38*	0.44	81	81
July 21	0.06	0.38*	0.44	81	81
July 22	0.06	0.38*	0.44	81	81
July 23	0.06	0.38*	0.44	81	81
July 24	0.06	0.38*	0.44	81	81
July 25	0.06	0.38*	0.44	81	81
July 26	0.06	0.39*	0.44	81	81
July 27	0.06	0.39*	0.45	81	81
July 28	0.06	0.40*	0.46	81	81
July 29	0.06	0.39*	0.45	83	83
July 30	0.06	0.40*	0.46	83	83
July 31	0.06	0.41*	0.46	83	83
August 1	0.06	0.40*	0.46	83	83
August 2	0.06	0.41*	0.47	83	83
August 3	0.06	0.41*	0.47	83	83
August 4	0.06	0.42*	0.48	83	83
August 5	0.06	0.42*	0.48	83	83
August 6	0.06	0.41*	0.47	83	83
August 7	0.06	0.42*	0.48	83	83
August 8	0.06	0.42*	0.48	83	83
August 9	0.06	0.42*	0.48	83	83

* <-Indicates NAQO Maximun Acceptable Limit of 0.20 ug/m3 Exceeded

70 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
August 10	0.06	0.43*	0.50	83	83
August 11	0.06	0.44*	0.50	81	81
August 12	0.06	0.44*	0.51	83	83
August 13	0.06	0.44*	0.51	83	83
August 14	0.06	0.44*	0.50	83	83
August 15	0.06	0.45*	0.51	83	83
August 16	0.06	0.45*	0.52	83	83
August 17	0.06	0.45*	0.52	33	83
August 18	0.06	0.45*	0.52	83	83
August 19	0.07	0.46*	0.53	81	81
August 20	0.07	0.46*	0.53	81	81
August 21	0.07	0.46*	0.52	81	81
August 22	0.06	0.44*	0.51	81	81
August 23	0.06	0.44*	0.49	81	81
August 24	0.06	0.42*	0.48	81	81
August 25	0.03	0.30*	0.33	80	80
August 26	0.03	0.30*	0.33	80	80
August 27	0.03	0.30*	0.33	81	81
August 28	0.03	0.29*	0.33	83	83
August 29	0.03	0.29*	0.33	34	84
August 30	0.03	0.29*	0.32	86	86
August 31	0.03	0.29*	0.32	87	87
September 1	0.13	0.58*	0.71	89	89
September 2	0.13	0.58*	0.71	89	89
September 3	0.13	0.59*	0.71	89	89
September 4	0.13	0.58*	0.71	89	89
September 5	0.13	0.58*	0.71	89	89
September 6	0.12	0.58*	0.70	89	89
September 7	0.13	0.58*	0.70	89	89
September 8	0.12	0.57*	0.69	90	90
September 9	0.12	0.57*	0.69	90	90
September 10	0.12	0.57*	0.70	90	90
September 11	0.12	0.57*	0.69	90	90
September 12	0.12	0.56*	0.69	90	90
September 13	0.12	0.56*	0.68	90	90
September 14	0.13	0.55*	0.68	90	90
September 15	0.13	0.55*	0.68	90	90
September 16	0.13	0.55*	0.67	89	89
September 17	0.13	0.54*	0.66	89	89
September 18	0.13	0.53*	0.66	89	89
September 19	0.13	0.53*	0.66	89	89
September 20	0.13	0.53*	0.65	89	89
September 21	0.12	0.53*	0.65	89	89
September 22	0.12	0.52*	0.65	89	89
September 23	0.12	0.52*	0.65	89	89
September 24	0.12	0.52*	0.65	89	89
September 25	0.12	0.52*	0.64	89	89
September 26	0.12	0.52*	0.64	89	89

* <-Indicates NAQO Maximun Acceptable Limit of 0.20 ug/m3 Exceeded

70 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : B
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
September 27	0.12	0.51*	0.63	89	89
September 28	0.12	0.51*	0.64	89	89
September 29	0.12	0.51*	0.63	89	89
September 30	0.13	0.51*	0.64	87	87
October 1	0.13	0.51*	0.64	87	87
October 2	0.13	0.52*	0.64	87	87
October 3	0.13	0.52*	0.64	87	87
October 4	0.13	0.51*	0.64	87	87
October 5	0.13	0.51*	0.63	87	87
October 6	0.13	0.50*	0.63	87	87
October 7	0.13	0.50*	0.63	87	87
October 8	0.13	0.49*	0.62	87	87
October 9	0.12	0.49*	0.61	87	87
October 10	0.12	0.48*	0.60	87	87
October 11	0.12	0.48*	0.60	87	87
October 12	0.12	0.47*	0.59	87	87

* <-Indicates NAQO Maximun Acceptable Limit of 0.20 ug/m3 Exceeded

Distribution Of 70 Day Fluoride Limits Exceeded In 1988 Growing Season
Station : B

Canada's 70 Day Gaseous Objective of 0.20 ug/m3 was exceeded 112 times.
This represents 100.0 % of the data.

Basic Statistics For 70 Day Data

Station : B
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 0.13 ug/m3
Arithmetic Mean : 0.08 ug/m3
Minimum Value : 0.03 ug/m3
Missing Data : 0.00 %

Gaseous Fluorides

Maximum Value : 0.59 ug/m3
Arithmetic Mean : 0.44 ug/m3
Minimum Value : 0.29 ug/m3
Missing Data : 0.00 %

Total Fluorides

Maximum Value : 0.71 ug/m3
Arithmetic Mean : 0.52 ug/m3
Minimum Value : 0.32 ug/m3
Missing Data : 0.00 %

70 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
June 23	0.33	0.63*	0.96	83	83
June 24	0.33	0.63*	0.96	83	83
June 25	0.33	0.63*	0.96	83	83
June 26	0.33	0.64*	0.97	83	83
June 27	0.32	0.61*	0.93	83	83
June 28	0.32	0.61*	0.93	83	83
June 29	0.32	0.62*	0.94	83	83
June 30	0.31	0.63*	0.95	83	83
July 1	0.32	0.64*	0.96	81	81
July 2	0.32	0.64*	0.96	81	81
July 3	0.31	0.65*	0.96	81	81
July 4	0.31	0.66*	0.97	81	81
July 5	0.31	0.67*	0.98	81	81
July 6	0.31	0.67*	0.98	83	83
July 7	0.30	0.67*	0.97	84	84
July 8	0.31	0.69*	1.00	84	84
July 9	0.31	0.72*	1.02	84	84
July 10	0.31	0.73*	1.03	84	84
July 11	0.31	0.75*	1.06	84	84
July 12	0.31	0.77*	1.08	84	84
July 13	0.31	0.77*	1.08	84	84
July 14	0.31	0.77*	1.08	84	84
July 15	0.31	0.77*	1.08	84	84
July 16	0.31	0.77*	1.08	84	84
July 17	0.31	0.77*	1.08	84	84
July 18	0.31	0.78*	1.09	84	84
July 19	0.31	0.79*	1.09	84	84
July 20	0.30	0.78*	1.08	86	86
July 21	0.30	0.77*	1.07	87	87
July 22	0.29	0.76*	1.05	87	87
July 23	0.28	0.76*	1.04	87	87
July 24	0.28	0.76*	1.04	87	87
July 25	0.28	0.76*	1.04	86	86
July 26	0.29	0.77*	1.06	84	84
July 27	0.29	0.77*	1.06	84	84
July 28	0.29	0.78*	1.07	84	84
July 29	0.29	0.78*	1.07	84	84
July 30	0.30	0.81*	1.10	84	84
July 31	0.31	0.84*	1.15	84	84
August 1	0.31	0.82*	1.13	84	84
August 2	0.31	0.83*	1.14	84	84
August 3	0.31	0.82*	1.13	86	86
August 4	0.32	0.85*	1.17	86	86
August 5	0.32	0.85*	1.17	86	86
August 6	0.32	0.85*	1.17	86	86
August 7	0.32	0.85*	1.17	86	86
August 8	0.32	0.85*	1.17	86	86
August 9	0.32	0.85*	1.17	86	86

* <-Indicates NAQO Maximun Acceptable Limit of 0.20 ug/m3 Exceeded

70 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF			% DATA USED FOR AVERAGE	
End Date	[Par]	[Gas]	[Tot]	Par	Gas
August 10	0.32	0.85*	1.17	86	86
August 11	0.32	0.85*	1.17	86	86
August 12	0.32	0.87*	1.19	86	86
August 13	0.32	0.88*	1.20	86	86
August 14	0.32	0.87*	1.19	84	84
August 15	0.32	0.88*	1.20	84	84
August 16	0.34	0.95*	1.28	84	84
August 17	0.34	0.95*	1.29	84	84
August 18	0.34	0.97*	1.31	83	83
August 19	0.34	0.97*	1.31	83	83
August 20	0.33	0.97*	1.30	83	83
August 21	0.30	0.93*	1.23	83	83
August 22	0.25	0.90*	1.15	83	83
August 23	0.23	0.87*	1.10	83	83
August 24	0.22	0.81*	1.03	83	83
August 25	0.20	0.74*	0.94	83	83
August 26	0.20	0.75*	0.94	83	83
August 27	0.20	0.77*	0.97	83	83
August 28	0.20	0.76*	0.96	83	83
August 29	0.18	0.75*	0.93	83	83
August 30	0.16	0.72*	0.88	83	83
August 31	0.16	0.71*	0.87	83	83
September 1	0.15	0.70*	0.85	83	83
September 2	0.15	0.71*	0.85	81	81
September 3	0.15	0.72*	0.87	81	81
September 4	0.15	0.71*	0.86	81	81
September 5	0.15	0.71*	0.86	81	81
September 6	0.14	0.70*	0.84	81	81
September 7	0.13	0.69*	0.82	80	80
September 8	0.13	0.70*	0.83	79	79
September 9	0.13	0.69*	0.83	80	80
September 10	0.14	0.72*	0.86	80	80
September 11	0.14	0.71*	0.85	80	80
September 12	0.14	0.71*	0.86	80	80
September 13	0.16	0.74*	0.89	80	80
September 14	0.15	0.72*	0.88	80	80
September 15	0.16	0.73*	0.88	79	79
September 16	0.16	0.71*	0.87	79	79
September 17	0.15	0.69*	0.84	79	79
September 18	0.15	0.68*	0.84	79	79
September 19	0.15	0.66*	0.81	79	79
September 20	0.15	0.65*	0.80	79	79
September 21	0.17	0.70*	0.86	79	79
September 22	0.16	0.69*	0.85	79	79
September 23	0.17	0.69*	0.86	79	79
September 24	0.17	0.69*	0.86	79	79
September 25	0.17	0.69*	0.86	79	79
September 26	0.17	0.69*	0.86	79	79

* <-Indicates NAQO Maximun Acceptable Limit of 0.20 ug/m3 Exceeded

70 Day Fluoride Concentration Running Average For 1988 Growing Season

Station : D
Sample Period Ending At 1200

SAMPLE PERIOD End Date	FLUORIDE CONCENTRATION BY MEDIUM UG/M3 AS HF [Par]	[Gas]	[Tot]	% DATA USED FOR AVERAGE Par	Gas
September 27	0.17	0.68*	0.85	79	79
September 28	0.18	0.69*	0.87	79	79
September 29	0.18	0.69*	0.87	79	79
September 30	0.18	0.69*	0.87	79	79
October 1	0.19	0.78*	0.97	79	79
October 2	0.19	0.83*	1.02	79	79
October 3	0.19	0.81*	1.00	80	80
October 4	0.19	0.80*	0.99	81	81
October 5	0.19	0.80*	0.99	81	81
October 6	0.19	0.79*	0.98	81	81
October 7	0.19	0.79*	0.98	81	81
October 8	0.18	0.78*	0.96	80	80
October 9	0.17	0.75*	0.92	79	79
October 10	0.17	0.74*	0.91	79	79
October 11	0.17	0.73*	0.90	79	79
October 12	0.17	0.73*	0.89	79	79

* <-Indicates NAQO Maximun Acceptable Limit of 0.20 ug/m3 Exceeded

Distribution Of 70 Day Fluoride Limits Exceeded In 1988 Growing Season
Station : D

Canada's 70 Day Gaseous Objective of 0.20 ug/m3 was exceeded 112 times.
This represents 100.0 % of the data.

Basic Statistics For 70 Day Data

Station : D
Sample Period : April 14 to October 12 1988

Particulate Fluorides

Maximum Value : 0.34 ug/m3
Arithmetic Mean : 0.25 ug/m3
Minimum Value : 0.13 ug/m3
Missing Data : 0.00 %

Gaseous Fluorides

Maximum Value : 0.97 ug/m3
Arithmetic Mean : 0.76 ug/m3
Minimum Value : 0.61 ug/m3
Missing Data : 0.00 %

Total Fluorides

Maximum Value : 1.31 ug/m3
Arithmetic Mean : 1.00 ug/m3
Minimum Value : 0.80 ug/m3
Missing Data : 0.00 %